


The Miniature Camera Monthly — For EVERY CAMERA User

MINICAM

JANUARY
25¢



FAKING A SHIP DISASTER . . .
PHOTOMICROGRAPHY . . . CAN THE
AGENCIES SELL YOUR PIX? . . .
ONE-SHOT COLOR CAMERAS . . .
FLUORESCENT LIGHTING . . . SNOW
PHOTOGRAPHY . . . LENS TYPES . . .
. . . MAKE YOUR OWN ANIMATED
CARTOONS . . . THE CAMERAMAN'S
"STORY BEHIND THE PICTURE"



EXC
lig
to Ag
It's eas
even w
with S
reflect
for ou
action,
Its rem
out los
ing wid
sensitiv
almost
comes
for 35
Speed
extrem
bridges
Made
ton, N

Ca
une



A Blow to Darkness

EXCELLENT pictures are now possible under lighting formerly thought hopeless, thanks to Agfa's amazingly fast *Superpan Press Film*.

It's easy to take indoor snapshots at night—even with a simple box camera if it's loaded with *Superpan Press Film*. Only inexpensive reflectors and flood lamps are needed. And for outdoor pictures requiring fast shutter action, *Superpan Press* is ideal.

Its remarkable speed has been achieved without loss of other desirable qualities—including wide latitude, fine grain and balanced color sensitivity. It extends your subject range to almost unlimited possibilities. *Superpan Press* comes in rolls, packs and cut film.

For 35mm. miniature camera owners, *Ultra-Speed Pan* provides an equally advantageous extreme speed. It is available in 35mm. cartridges and spools as well as bulk lengths. Made in U.S.A. by Agfa Ansco, Binghamton, New York.

Agfa

SUPERPAN PRESS

and

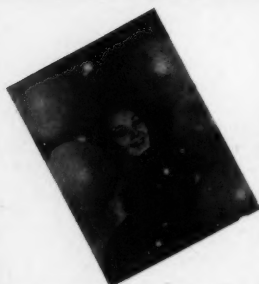
ULTRA-SPEED PAN



MINICAM

THE MINIATURE CAMERA MONTHLY • FOR EVERY CAMERA USER

EDITED BY WILL LANE, A. R. P. S.



MINICAM'S COVER

"Balloon Barrage" by Henry Clay Gipson is a timely takeoff on world conditions at a time when photographers here safely and happily can use balloons, not for air-raid defense, but for New Year decorations. Kodachrome Type B, three flood bulbs, 1/50th at f/5.6.

JANUARY, 1940
VOL. 3 No. 5

ARTICLES

Let's Take This Picture.....	13
Meet Winter with Your Camera.....	20
Fluorescent Lighting.....	26
The Story Behind the Picture.....	38
Legs.....	42
Photograph the Life of the Object.....	46
My Favorite Camera and Why.....	50
The New World of Photomicrography.....	54
Color Cameras.....	60
Home Lighting Simplified.....	64
Dancers Before the Lens.....	70

5-MINUTE FEATURES

Can Photography Prove Spiritualism?.....	18
Torpedoes!.....	32
Can Agencies Sell Your Pictures?.....	35
How to Test Your Shutter.....	41
Play Photo Dilly Dally.....	48
How to Copyright Pictures.....	80
Mountains Out of Molehills.....	85
Cable Release for Remote Control.....	88

DEPARTMENTS

In Focus.....	6
Being Critical.....	78
Kamera Kwiz.....	82
Build It Yourself.....	86
Behind the News Camera.....	90
Salons to Enter.....	92
Salons to See.....	95
Contest Calendar.....	96
Photography Trade News.....	104
Superpan Fanning.....	117
Questions to The Editor.....	118
Book Reviews.....	116

CINECAM

Trick Effects with Any Camera.....	119
How to Make Animated Cartoons.....	122
Sound for Your Movies.....	126

MINICAM (TITLE REG. U. S. PAT. OFF.). PUBLISHED AT 22 E. 12TH ST., CINCINNATI, OHIO. MANAGING EDITOR: WILL LANE, A.R.P.S. BUSINESS MANAGER: A. M. MATHEW. EDITORIAL ASSOCIATES: HENRY CLAY GIPSON, SALLY PEPPER. CONTRIBUTING EDITORS: JACOB DESCHIN, A.R.P.S.; JACK POWELL, J. ONSLAIN LOOTENS, F.R.P.S. ART DIRECTOR: M. JAY SMITH. PUBLISHED MONTHLY BY THE AUTOMOBILE DIRECT PUBLISHING CORP. YEARLY SUBSCRIPTION, \$2.00 IN U. S. A. AND POSSESSIONS, CANADA AND COUNTRIES IN PAN-AMERICAN PORTAL UNION, \$3.00. ELSEWHERE, \$3.50. SINGLE COPIES, 25c. EASTERN ADVERTISING OFFICE: FERRY GILBERT, 82 WEST 67TH STREET, NEW YORK CITY. TELEPHONE VA 6-8354. WESTERN ADVERTISING OFFICE: BERNARD A. ROSENTHAL, 333 NORTH MICHIGAN AVENUE, CHICAGO, ILLINOIS. TELEPHONE FRANKLIN 7166. WEST COAST OFFICE: A. BOTHERBERG, 5651 S. BUSHING STREET, LOS ANGELES, CALIF. TELEPHONE BREKES 2877. ENTERED AS SECOND CLASS MATTER AT CINCINNATI, OHIO, MARCH 31, 1938, UNDER THE ACT OF MARCH 3, 1879.



PERFEX Thirty-Three

WITH F3.5 GRAF PERFEX ANASTIGMAT

35mm. MINIATURE CAMERA
COMPANION TO THE FAMOUS
PERFEX Forty-Four

—————→ **\$29⁵⁰**

Just look at those Perflex thirty-three features! Where else at anywhere near this low price can you get so many fine features in a precision instrument. The large aperture F:3.5 lens is in a new compact type helical focusing mount coupled to the range finder for automatic focusing. Its high speed focal plane shutter provides a wide range of exposure speeds from 1/25 to 1/500th second. It meets every picture taking requirement. It's the camera "buy" of the season.

- Coupled (long base) range finder.
- F:3.5—2-inch Graf Perflex lens.
- Built-in exposure meter.
- Focal plane (1/25 to 1/500th) shutter.
- Built-in flash synchronizer.
- Interchangeable lenses—for telephoto, etc.
- Uses 35mm film (standard spools) 36 exposures.
- American made throughout.

THE PERFEX forty-four

Everything you would expect to find in your ideal camera, you will find in the Perflex forty-four. Its high speed focal plane shutter gives you slow speeds of 1 second—top speeds of 1/1250th second. Large aperture, highly corrected lenses focus automatically with the Perflex coupled range finder. The built-in flash synchronizer assures perfect "peak" exposures in flashlight photography. Built-in exposure meter eliminates the last element of guess work in picture taking. Have your dealer show you a Perflex forty-four today.

WITH F3.5 LENS

\$37.50

WITH F2.8 LENS

\$47.50

EVEREADY CASE, EXTRA \$5.00



Prices
subject
to change
without
notice

CANDID CAMERA CORP. of AMERICA

844 W. ADAMS STREET

CHICAGO, ILLINOIS

For sale
at all good
dealers

EASTERN DISTRIBUTORS—RAYGRAM CORP., 425 4th AVE., NEW YORK CITY
WEST COAST DIST.—PARAMOUNT PHOTO SUPPLY CO., 521 S. SPRING ST., LOS ANGELES



Not Faked

Sirs:

I like trick photography. In fact most of the photographers I know spend a lot of time working out unusual stunt shots. However, for a straight picture that really startles people I have seen few to beat my picture "Human



Fountain." If you look close you can see the

garden hose on the lawn beneath the girl's legs. Let's have an article on trick photography real soon.

HENRY MILTON.

Long Island City, N. Y.

Okay, we'll have an article on trick photography soon in MINICAM.—Ed.

"15 Minutes Later"

Sirs:

When I started to read the article by Leo Nejelski, and even when I had finished, I thought it was just another of those "see the pictures all around you" articles which previously had helped me not at all. About fifteen minutes later, however, sitting in the same chair in which I had read the article, two picture subjects loomed in front of me, begging to be recorded photographically. They are now on my list of pictures to be taken at the earliest opportunity. So please give us more of Mr. Nejelski. His kind of pictures are the kind we amateurs like to take and can take ourselves.

WILLARD F. BUB.

Cleveland, Ohio.

"In the Air"

Sirs:

Boy, you left us up in the air. Was reading the swell article by Leo Nejelski, in MINICAM

NEW SUPER OMEGA B

Corrects Distortion Scientifically

Completely new in design, in exactness of control and in flexibility of service, the Super Omega B brings to the miniature worker a new high standard of dark-room performance. Outstanding advances: *Tilting negative carrier* (mounted on rotating turntable), when used with tilting board, corrects linear distortion; gives needle-sharp images at full lens aperture. *Negative focusing.* Inclined steel girder supports. New type dustless film carriers. Dyna-thermal ventilation. Takes film up to $2\frac{1}{4}'' \times 2\frac{1}{4}''$. \$77.50 without lens. Slightly higher west of Rockies. Fully guaranteed.

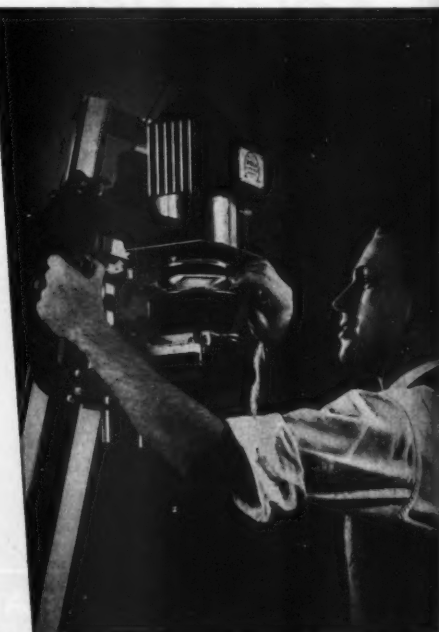
NEW OMEGA C-II—taking negatives up to $3\frac{1}{4}'' \times 3\frac{1}{4}''$ —has all the features of the Super Omega B except negative focusing and distortion control. Also \$77.50 without lens. Write for folder G.

Full line of accessories for both machines: attachments for copying, color separation, etc.; color-corrected lenses. Simon, Bausch & Lomb Tessars, Dallmeyer.

SIMMON BROS., 37-06 38th St., Long Island City, N. Y.

OMEGA ENLARGERS

MADE
IN U.S.A.



for December, when he suddenly disappeared on page 44 in the middle of a sentence. You can't do that to us. Where is the rest of the story?

ARTHUR C. FARNSWELL.

Miami, Fla.

See page 93, December MINICAM. Through a typographical error, the "jump" line was omitted in some copies. For this month's article by Mr. Nejelski, see page 13.—Ed.

"What With"

Sirs:

I agree with the reader who asks you to give us the "what with" angle. (MINICAM, Nov., p. 4). I think you have a swell magazine but it would be even better if you would give us a little more data, (kind of camera used, lens stop, shutter speed and film used). Photographers are interested in these details and it might guide others who plan to buy a new camera by letting them know what certain cameras will do.

CHARLES H. BROCKMEYER, JR.

Fredonia, Ky.

The first of a series of articles by well-known photographers describing their camera preferences appears in this issue. See "My Favorite Camera and Why."—Ed.

Solarization Method

Sirs:

An additional method of solarization that I have used with considerable success was left out of the material I sent you. (See "Solarization Process," MINICAM, Oct., 1939, page 26.)

From the original negative, make a diapositive on slow brilliant-working film, such as commercial ortho. Try to keep the full tone scale of the original negative in this positive transparency.

From this transparency, a paper negative is made and treated as were the solarized paper prints described in the article. This gives the image from which the final print is made.

A refinement of this method is to use film instead of paper for the second negative to eliminate the "texture" of the paper.

HENRY HOLMES SMITH.

Bloomington, Ill.

"Rapid Rectangular"

Sirs:

"Superpan Panning" is always good for a laugh!

As a salesman for a Photographic Supply Co. (Kretschmess), I particularly appreciated the gag about box cameras that always have a "very good lens." It was only beat for me by

To Get Your REWARD



For Taking GOOD PICTURES

USE
A



(Reg. U. S. Pat. Off.)

GLASS-BEADED SCREEN

The care that you use in getting the right exposure and perfect focus is amply rewarded when you project your movies or stills on a Da-Lite Glass-Beaded Screen. It brings out the beauty of color or black and white film with "camera-eye fidelity". The beads, applied by Da-Lite's exclusive process reflect maximum light without sparkle or glare. They are guaranteed not to shatter off. The white fabric is specially selected for its light reflective quality and remains white and pliable longer than any other white surface. See Da-Lite Glass-Beaded Screens at your dealer's. Available in many styles and sizes including the popular Challenger (with tripod) shown above. Write for illustrated literature.

DA-LITE SCREEN CO., INC.

Dept. 1M, 2723 N. Crawford Ave., Chicago, Ill.

the fellow that spent 30 minutes telling me about the wonderful "Rapid Rectangular" lens he had in his camera.

H. S. CLEMENT.

Omaha, Neb.

"Minifan and Cinefan"

Sirs:

Having recently invaded the cine field with my amateurish glee, while still keeping up my status as a minifan, I want to express my view on the new department in MINICAM, namely CINECAM. From the first, it has been very instructive and I will be looking for it every month. The more the better.

EDWARD EDGERTON.

Fresno, Calif.

Beginning this month, enlarged Cinecam department begins on page 119. Let readers tell us whether they approve of this increased size.—Ed.

"Suitable for Framing"

Sirs:

Have you seen an exceptionally striking and interesting photograph lately, of the type which might have been made by an amateur, which might be suitable for a framed enlargement about 3x5 feet in size?

We should like to obtain one or two negatives of this type. It would be necessary for us to have the original negative. A price should be set on the original negative of each print submitted, the size of the negative be given, and assurance that a release for advertising use can be obtained from any individual whose face appears in the photograph.

THE HALOID COMPANY,
JOHN B. HARTNETT.

Rochester, N. Y.

What Ship

Sirs:

Mr. Deutsch's ship (December MINICAM p. 7) is the Santa Paula. He was not the only one to take snapshots of this ship at San Jose de Guatemala. See enclosed. I have a hunch that's where he took it and that he was in our party in the trip to Guatemala City.

I wonder whether he remembers? The trip from the coast up the mountains to Guatemala City is one I will never forget.

H. E. WOODINGER.
New York City.



Hollywood's Latest . . . For Better Pictures New "DINKY INKIE" Light

.. Powerful All Purpose 100-
150 Watt Spot Light
For Only \$15⁰⁰



Here at last is a powerful yet small-sized, light-weight, inexpensive, all purpose light—to high-light portrait subjects and for greater flexibility in modeling close-ups; to eliminate shadows and dark corners in indoor movies. Easy to carry and set up on your tripod; locks in any position. Operates in absolute silence. Will not heat up excessively even after hours of use. Light output will focus from an 8-degree spot to a 44-degree flood. Lever arm, protruding from both front and rear, is moved from side to side for focusing spot to flood. Numbered graduations enable duplicating a given focus position. The "DINKY-INKIE" is the "rave" of Hollywood cameramen because it supplies so many lighting needs. At only \$15.00—how can you do without it?

ASK YOUR DEALER FOR DEMONSTRATION

Distributed by Eastman Kodak Stores

Manufactured by

BARDWELL & McALISTER, INC.

7636 SANTA MONICA BLVD.

HOLLYWOOD CALIFORNIA

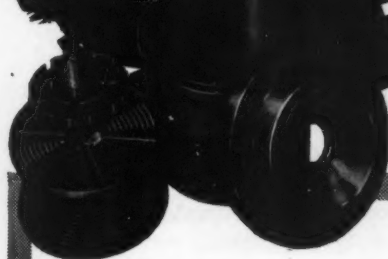
\$15 Ht. 7 $\frac{1}{2}$ " Diam. 5 $\frac{1}{4}$ "
Wt. 2 $\frac{3}{4}$ Lbs.
With 15 ft. of cord.

IT DIDN'T TAKE LONG...
for 55,000 wise camera fans to find

10 IMPORTANT REASONS to buy THE F-R "SPECIAL"

THE NEW F-R ADJUSTABLE
ROLL FILM DEVELOPING TANK

\$1.85



- 1. GENUINE BAKELITE.** Constructed of genuine chemically resistant Bakelite especially compounded for photographic use.
- 2. STAINLESS STEEL PARTS.** Non-corrosive, non-fogging. Eliminates danger of breakage during adjustment.
- 3. ADJUSTABLE TO ALL POPULAR SIZES.** Flanges are constructed to withstand lots of usage and can be removed for quick drying and cleaning. (See chart for all sizes to be accommodated.)
- 4. LOADING FEATURES.** Films may be loaded from inside, outside—or both.

- 5. CAPACITY.** Only 8 to 16 oz. of solution needed. (See chart for exact quantity for each size film.)
- 6. REVOLVING LIGHT TRAP.** Stops all light from entering and aids in the quick filling and distribution of solution over the entire film.
- 7. CHECK STOP.** The patented F-R Check Stop prevents the film from unreeing during agitation.
- 8. AGITATOR.** Built onto reel it has a hollow core which permits F-R Thermometer to remain in tank during use.
- 9. GUARANTEED.** Moisture-proof, warp-proof and for efficiency in operation.
- 10. \$1.85.** A price that makes it photography's outstanding value.

HARDLY three months have passed since the F-R "SPECIAL" was first introduced and already more than 55,000 camera fans have proved to their entire satisfaction that here is the greatest value ever offered in roll film developing tanks. Many new features in addition to all the best points of other F-R developing tanks, acknowledged best the world over, make the F-R "SPECIAL" photography's outstanding buy. With this tank more and more camera-users have become rabid camera-fans because they have found more fun in photography—by doing their own developing. See it at your dealer today. Check carefully the 10 important reasons why you should buy this tank—and if you don't think you are getting the greatest value ever offered in a developing tank your money will be refunded instantly. For the most fun and the best "money's worth" in photography—buy an F-R "SPECIAL" now.

All F-R Products are made in America.

THE F-R "SPECIAL" WILL ACCOMMODATE:

Quantity	Film		Capacity
1 roll	35MM	(36 exposures)	8 oz.
*2 rolls	35MM	(18 exposures)	8 oz.
*3 rolls	2828	(Bantam)	8 oz.
*2 rolls	2327	(Vest Pocket)	11 oz.
*2 rolls	2329		12 oz.
*2 rolls	2130		14 oz.
1 roll	2116		16 oz.
With the addition of the F-R Double Flange* the following may be accommodated.			
*2 rolls	35MM	(36 exposures)	16 oz.
*4 rolls	35MM	(18 exposures)	16 oz.
*6 rolls	2828	(Bantam)	16 oz.

*At one time. †F-R Double Flange (Only)—\$4.50.



FINK-ROSELIEVE CO., INC.

109 WEST 64th STREET • NEW YORK

CHICAGO: The Merchandise Mart • LOS ANGELES: 324 North San Pedro Street

We are fully aware that our performance-statements extend beyond the capabilities of previously known "chemical" developers. We know, too, that many of these statements will be difficult to believe. But we know our product and what may be expected of it...Vital changes in any industry always invite criticism, and we fully expect much "horse-and-buggy" comment from die-hards. Our answer is to try the product, follow the directions—then enjoy truly better photography...

H.S.P. REFRACT-O-GRAIN

TRADE MARK

The Physical Developer

WESTON FILM SPEED RATINGS FOR REFRACT-O-GRAIN:

	Weston Ratings Day- light	Tung- sten	Dev. Time at 70° for .8 gamma
Eastman Panatomic X	8	6	8
Eastman Plus X	20	12	11
Dupont Superior Pan	12	8	12
Dupont Micropan	4	3	7
Agfa Superpan Supreme	32	20	15
Agfa Ultra Speed Pan	40	24	15
Agfa Fine Grain Plenachrome	16	5	12

\$1.85 for 40-ounce bottle

(\$2.65 for the complete Refract-O-Grain Developing Kit, including Refract-O-Grain Developer, 1-lb. can of Chrome Alum, 1-qt. can of Tropik Fixer. Prices slightly higher in the West.)

• FREE FACTUAL DATA

Full details in booklet, "Physical Development and Modern Photography" by Herbert C. McKay, F. R. P. S. Write for your free copy.

- ★ No grain-clumping in enlargements up to 20 or 30 diameters.
- ★ Resolving power of the emulsion is greatly increased compared to "chemical" development.
- ★ Full gradation is preserved, retaining detail and tonal quality of contact prints.
- ★ May be safely used over a wider range of temperatures than "chemical" developers.
- ★ Weston ratings covering effective speeds are available (see table at left).
- ★ Quicker than "chemical" fine-grain development; films completely processed (including fixing) in from 15 to 23 minutes.
- ★ When used with Chrome Alum and Tropik Fixer, films have practically indestructible, non-scratch surface.

Camera Clubs

• If you are desirous of scheduling an evening devoted to the subject of "Physical Development," we will arrange to send complete details.

• Your dealer has a 32-diameter Refract-O-Grain enlargement on his counter. Examine it closely to check Refract-O-Grain advantages.

HARRIS · SEYBOLD · POTTER COMPANY

5410 EAST SEVENTY-FIRST STREET • CLEVELAND, OHIO

Manufacturers Of Fine Graphic Arts Products For Over Half A Century



"What Ship"

Sirs:
Here is a picture of the Santa Rosa, but from the stern, the best I could get on the spur of the moment, without going through all my negatives.

Hope this solves the "What Ship" problem for Mr. Deutsch.

K. KAISER.
Belleville, Ill.

Elena

Sirs:

It is the Santa Elena as this snapshot will prove. I was a waitress on the boat at the time and took this snapshot of some of the crew members chewing the fat on the boat deck outside the galley.



I hope that Capt. Prengel doesn't see this as girls were not allowed to talk to the crew while on board. We had some swell times ashore, though.

HARRIET C. STOWAL.

Flushing, New York.

Sirs:

It is the S.S. Santa Lucia.

JOHN MCGREGOR.

New Orleans.

Sirs:

... the Paula.

A. E. RINTZLER.

Brooklyn, N. Y.

"Four Sisters"

Sirs:

The ship pictured on page 7 is one of our four sister ships, SANTA LUCIA, SANTA ROSA, SANTA PAULA, or SANTA ELENA. The first of these is at present serving the West Coast of South America via the Panama Canal. The other three serve Venezuela, the east coast of Colombia and the Netherlands West Indies.

R. M. DYSDALE, JR.

Grace Line, Inc.,
New York City.

BEST NEWS of the NEW YEAR

PRICES REDUCED

ON ALL

Rolleiflex

AND

Rolleicord
CAMERAS!



THE AUTOMATIC
ROLLEIFLEX NOW

ONLY \$144.00

(without case)

THE original twin-lens reflex is now, more than ever before, the best buy on the whole camera market. Whether you get one of the less costly Rolleicords or the master of them all—the Automatic Rolleiflex—you can be sure that you are getting the *most for your money*. For all Rolleiflex cameras are excellent values at the prices we are now able to establish. Get your Rolleiflex now.

Here Are the New Low Prices:

The Automatic Rolleiflex, with Zeiss Tessar f/3.5 lens and an ultra fast 1/2.8 finder lens, in Compur Rapid delayed-action shutter (speeds up to 1/500), without case, now only.....\$144.00
New Standard Rolleiflex, with Zeiss Tessar f/3.5 lens in Compur Rapid shutter, without case, now only.....\$130.00
New 4 x 4 cm. Rolleiflex, Zeiss Tessar f/2.8 lens, Compur Rapid shutter, without case, now only.....\$127.00
Model II Rolleicord, Zeiss Triotar f/3.5 in Compur shutter, without case, now only.....\$ 90.00
Model Ia Rolleicord, Zeiss Triotar f/4.5 lens in Compur shutter, without case, now only.....\$ 67.00
Rolleiflex cameras and accessories are sold by leading dealers everywhere. If your dealer cannot demonstrate or provide you with complete information, write us direct. Literature sent without cost or obligation. Address:

BURLEIGH BROOKS

INCORPORATED

127 WEST 42ND STREET NEW YORK

NEW G-E FLASH BULBS

STOP ACTION!



Photo by Russell Salmon, Philadelphia Inquirer, using 8 G-E flash bulbs, 1 on extension cord and 1 at the camera.

Prize Shots come easier than ever ... with the new G-E MAZDA Photo-flash lamps. For they give you split-second precision in flashing ... truly amazing uniformity in timing. That's why one synchronizer setting gets good pictures with every size G-E Synchro-Press lamps. You also get the benefit of new G-E dye-protected safety jackets that act like shatterproof glass. Yes, that color on G-E bulbs is your assurance of a uniform protective coating—which transmits over 99% of the flash! You get quick break filaments that make for better, surer synchronizer operation. And you get G-E dependability. Slip a G-E No. 16 into your synchronizer and see for yourself!

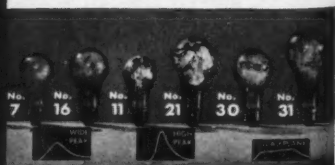
NEW G-E MIGHTY MIDGET

Sensational convenience and surprising performance make the new G-E Synchro-Press No. 5 the news of the day. No larger than a golf ball, it gives plenty of light for most pictures, especially with high-speed film and lenses. Highly effective in spotlights. And you can get up to 30 in one pocket. Wide flash peak. Simple, low cost adaptor permits its use in your flash gun.



A G-E Peak for Every Need

GENERAL  ELECTRIC
MAZDA PHOTOFLASH LAMPS



Let's take THIS PICTURE!

Take a trip with a successful amateur photographer and watch him at work with simple subjects

LET us imagine that you have come to me for advice. After some discussion on the subject of making pictures, you become impatient and say: "*Talking* about photography is all right. It gives me ideas. But I also am interested in *seeing* pictures made. By *seeing* how you work, I can understand quickly and clearly how you happen to select certain subjects . . . why you select certain viewpoints . . . how you go about the various details of picture making."

Very well. Come along and look over my shoulder while I take a couple of pictures. Easy ones, that any camera owner can take.

Imagine we are on a vacation cruise, aboard the S.S. Santa Marta of the United Fruit Line. We sailed from New Orleans several days ago, spent a day and evening in Havana, and now we are two days out, heading for the Canal Zone.

For four days we have been enjoying the freedom of the boat and the shore excursion at Havana. The first blush of enthusiasm over new

By LEO NEJELSKI ILLUSTRATED BY THE AUTHOR

atmosphere, new people, new surroundings, new sights and vacation freedom has begun to wear off. We have been rushing about feverishly, picturing this and that. And in the process we have arrived at the point where we realize that we have wasted a lot of film in our first enthusiasm. But we don't mind. Because now we are ready for some *calm* and *serious* picture making.

This morning, after breakfast, we look through the dining-room porthole and lo! there on the deck are two sailors standing at the forward mast.

"What are they doing?" we ask the steward.

"See the younger of the two men?" he asks. "Well, he's going aloft to tar those new ropes they strung up yesterday to support the mast."

We cheer. This means some new action to picture. So we rush to our cabin for our Zeiss Super Ikonta B, our filters and meter. Our hurry is not in vain. The older man already has pulled a rope chair to the top of the mast and the younger sailor is climbing up the ratlines, a bucket of tar compound swinging gaily from his belt.

Reaching the top of the ladder, he puts one foot out, then swings into the chair that is up there waiting for him. He waves to the man below. It is a signal for the old salt down there to begin letting out

rope. The young sailor begins to descend slowly. And as he descends he works busily, dipping a rag into the bucket and then smearing the black stuff on the new cable. The part that is tarred gleams and glistens in the sunlight.

A wealth of exciting memories and incidents from books rushes through our minds, books about sailors and their adventures on windjammers of bygone days. Through our minds, too, rushes a bit of envy. The young chap up in the chair is doing exactly what you and I would like to be doing at this very moment.

Dangling from his rope chair, he forms a picture that symbolizes the sea for us. It is a picture of the confidence of those who live on the ocean, confidence that the sea will not betray them.

A brisk breeze is blowing. The ship pitches and rolls. But the young sailor knows the water's rhythm. He continues his task with calmness and assurance.

We study the sky for a moment. There are no clouds, it is a solid mass of blue.

We place a medium red filter over the lens. The filter will darken the bald, bright blue sky and correct the blue blindness of the panchromatic film. Without the filter the sky would come out white or gray. But the sky is actually bright blue. And we visualize that blue as almost black on the finished print.

Now we wonder what shutter speed to

2





4

(1) Dangling from his rope chair, the sailor momentarily symbolizes the sea. A medium red filter is used to darken the blue sky in which there is a lack of clouds. Exposure 1/200th at f4.

(2) A second shot is hurriedly made, as the rope-tarring sailor descends. The rapid shutter speed is used because of the motion of the subject and of the rolling vessel.

(3) When the subject spies the cameraman and self-consciously faces him, there is no further possibility of pictorial results.

(4) "Tarring the Rope." An enlargement from part of the picture shown in Fig. 1. The boom has been retained in the upper corner to help frame the print and balance the diagonal composition.

3

use. We dig out our exposure meter. Obviously, if we point it up at the young man, the meter will take in too much sky and we will obtain a false reading. We can't get up close to him. So we point the meter downward and obtain a general reading. We'll let the sky come as it may. Its tone value is not important but we do want to make sure that we will photograph the young man correctly. And the light reflected from his clothing will be about the same as the light reflected from the ship in general.

Then we compensate for the 4-time red filter. We must do this because the filter we are using lets in only $\frac{1}{4}$ as much light as would pass through the lens with the same size opening of the iris. Finally we decide on an $f4$ opening with the shutter set at $1/200$ of a second.

We use a high shutter speed because the boat is pitching and the young man is swinging about freely. We want to make doubly sure that we will not blur the negative.

By this time the young sailor has worked down quite a way, so we begin sighting frantically through the window of the camera, focusing all the time. The idea of a young man sliding down a rope seems less dramatic. Through the window we see only ropes and a man. There is not the drama that we visualized in our mind's eye.

We look about hastily. Above our heads is a boom. Why not try sighting him with that boom in the foreground? The boom will come out of focus, but it will cross the ropes at almost right angles. It will break up the monotony of the ropes against the sky and will tend to direct the eye to the sliding sailor.

Moving backward, we sight again. Now the scene appears more dramatic. There seems to be more substance. We focus once more. Ah! Here is the force and the individuality of the sea. We make one exposure. It becomes Fig. 1.

The ship rolls. The sailor has swung outward. We sight once more and make

the second exposure, Fig. 2.

As we make these exposures, the young man goes about his work without realizing that we are taking his picture. But as we walk toward him while he continues to descend he spies us and begins to pose. In spite of this we cannot resist making the third exposure.

Illustrations 1, 2 and 3 are made from test prints of the entire negatives. We usually make test prints about 7 inches square from our $2\frac{1}{4} \times 2\frac{1}{4}$ negatives. The larger prints from the small negatives made quickly and roughly give a more accurate idea of the values in the negatives than the contact prints.

After studying the test prints we conclude that Fig. 1 and Fig. 2 are equally good. We have a slight leaning toward the first. In making a final print, only enough of the boom is retained to add contrast to the ropes and the sailor. It is printed dark to snap out the shiny tarred rope and to subdue the other details.

We then title it, "Tarring The Rope," (Fig. 4), because it describes exactly what is going on and what we want others to see in this picture.

For our second subject, let's go inland, and look at "Ol' Man River."

After a careful study of the figure to capture the lighting that will emphasize the thought we desire to convey, three exposures are made (Figs. 5, 6 and 7).

The test prints from the complete negatives reveal that we have been successful in capturing the texture of the figure. The third print (Fig. 7), however, fascinates us because it best captures the deep-set eyes and the heavy, contrasting shadows. In making the final print, we over-expose the foundation and subordinate the background to the figure itself. The result is Fig. 8.

We have made two pictures together. But before closing, I must warn you that no two people think alike and, thus, no two people approach the taking of the same picture in exactly the same manner. The final picture, the final result is the all-important thing.



5

(5) The first exposure of "Ol' Man River" is made only after walking around the statue and noting the effect of the changing point of view.



6

(6) Three shots are made as it is easier to judge a picture in print form than in real life.

(7) The third is the one that seems best to convey the photographer's idea. Exposure 1/200th at f/8.



7

(8) "Ol' Man River." The final enlargement as made from Fig. 7.

8



DOES *Photography* PROVE

BY SALLY PEPPER

Photographs from European, Black Star,
and the collection of Clara Louise Leslie



1



2



3

- (1) Colin Evans, amateur medium, snapped himself in total darkness by means of infra-red light.
- (2) "The Moving Finger writes; and having writ, moves on" shadows of the past govern the hands of today
- (3) Faces of spirits haunting the crowds during "The Silence" on Armistice Day in London.
- (4) Raymond Lodge as he is supposed to have appeared sometime after his death in the last war.

THE desire to communicate with the dead, to penetrate the veil that separates the world of the living from whatever may exist beyond, increases during times of national crisis. Mediums, whose privilege it is to communicate with the dead, increase in number—some even claiming that it is possible to partially materialize the spirits with which they communicate.

The phenomena of mediumship in which a dead person is able to express himself through a living being with a specially developed sensitivity are impossible to prove. But there are phases of spiritualism known as "physical" phenomena which apparently produce tangible, physical effects external to the medium's body. If this is true, then, argue the skeptics, they should be photographable.

Psychic photographers who possess the power which causes the spirits of dead



4

SPIRITUALISM ? ? ?



(5) "Photography is inadequate to depict the perfect beauty of Katie's face," wrote Sir William Crookes of spiritualism's famous Katie King shown here.

(6) Mary M, famous Canadian medium. On the surface of the ectoplasm issuing from her mouth may be seen the face of a departed relative.



5

people to manifest themselves on photographic plates are rare indeed. The pictures reproduced on these pages are among the few purporting to be authentic and the work of spiritualist photographers.

Fig. 1 is a self portrait made at a seance held last June in Conway Hall, London, by Colin Evans, a well-known spiritualist, demonstrating levitation. A London newspaper set up its camera loaded with infra-red film in the seance room and at the proper moment Evans (Page 101, please)



6

Meet

W I N T E R

WITH YOUR CAMERA

NO negative material can record the full range of brightness found in a winter landscape nor can the whiteness of the paper print itself ever equal the intensity of sunlit snow. But reproducing this beauty on sensitized paper is a challenge to camera ingenuity and skill.

Sombre trees in a field of sunlit snow, the needles of evergreens pushing up through a sparkling ice coat, dark figures skiing swiftly over gleaming white slopes or skimming over glassy lakes—these are winter's gifts to the photographer.

Know when not to take pictures. If light is poor, exposing film is a waste of time. A sum-

By **ANDREW WYLIE**



(1) "Butterfly" on the rink at Lake Placid Club. The skater's form rather than details of her face and costume are emphasized by underexposing. Note the details in the ice which brief exposure brings out. Super Ikonta C, Agfa Superpan film, medium yellow filter, $f/8$, $1/200$ th second. By Odie Monahan.

(2) "Winter's Fangs." The sparkling white of snow and ice is emphasized by the dark shrubbery in the background. Voigtlander camera, Panatomic film, $f/11$, $1/100$ th second. By Charles G. Myers.





3

mer landscape can be made on a dull day, printed on hard paper, and be worth looking at, but a snowscape made under the same lighting conditions may approximate the appearance of a mud puddle. In weak, diffused light, the snowy countryside is devoid of color and shadow. It is difficult enough for the human eye to distinguish contours and establish perspective. For film, which is less selective, it is impossible.

Film. Panchromatic film gives good rendering of the blue in snow

shadows. Fast pan films are recommended because they are obtainable with anti-halo backing and because they permit very short exposures which tend to prevent the blocking up of highlights while retaining shadow details.

Filters. A snowscape is boring if both sky and snowfields print white. To overcome this a filter is used. A medium yellow filter will deepen the sky without making the contrast too great or results too artificial. A light red filter gives greater contrast between snow and sky and cuts a certain amount of distance haze. Its slight over-correction is not objectionable in a type of subject where the chief danger is monotony. A deep red filter over-corrects too much for ordinary use, making the sky almost black and the clouds look like cotton batting pasted onto the print.

Exposure. The correct exposure for

snow is short, while for darker objects and figures in a picture it is much longer. Theoretically it is impossible to get a perfectly balanced negative of a person standing in snow: either the snow detail is not complete or the figure is underexposed. Because of the latitude of film, a satisfactory compromise, within narrow limits, can be made in the exposure.

Either an exposure reading of the dark object is taken and then one of the general scene and an exposure half way between the two given, or a decision is made whether the snow itself or the dark object is more important and the exposure is made for one or the other, making that the dominant part of the picture. A thin negative produces muddy-looking snow while an over-exposure printed long enough to bring out the details in the snow will lose details in the darker portions of the print.

4

(3) "Snow Texture." Photograph newly fallen snow when the sun is low in the sky so that shadows are cast across the surface by individual snowflakes. By Ricardo Moncalvo.

(4) Skiers in soft snow make effective subjects for photographs. Speed Graphic camera, $f4.5$, $1/3000$ th second. From Wide World.





5

(5) Closeup skiing shots must be planned with the skiers so that the photographer, knowing where they will jump, has an opportunity to focus beforehand. Rolleiflex camera, Panchromatic film, yellow filter, $f3.8$, $1/3000$ th second.

(6) A medium yellow filter darkened the sky accentuating the halo formed by an early morning sun. Speed Graphic camera, Agfa Super Pan Press film, $f16$, $1/50$ th second. By Ray Atkeson.

(7) Closeup of icicles on a branch overhanging a stream. $f8$, $1/50$ th second. By John O. Farrell from F. P. G.

6

7



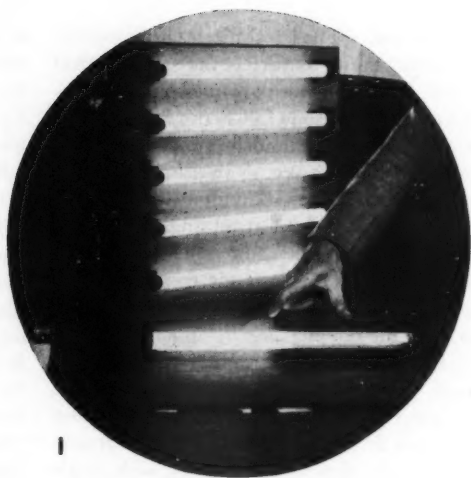
Texture. The technique for photographing snow texture is the same as that used for any granular material. Immediately after a snowfall is the best time to work. Pictures should be made when the sun is low in the sky, so that long shadows are cast by the individual snowflakes. Holding the camera at an angle of ninety degrees from the sun will give good texture, but the nearer the camera can be pointed into the sun, the more pronounced will be the effect.

Equipment. With temperatures often well below freezing, it is advisable to take a camera which is easily manipulated and requires few adjustments. For this reason accessories should be few. A wide-angle lens is valuable for panoramic scenes, but

a lens of long focal length will be used much oftener, since details are usually more interesting. A yellow filter and a light red filter plus a sunshade are all the gadgets that are absolutely necessary in addition to an exposure meter, which is a *must*.

Despite the shortcomings of materials, the photographer of winter can obtain the desired effect as relative rather than the absolute intensities convey the emotional aspects of the scene. Small, dark accents help snow keep its intense, sparkling quality. If the photographer adjusts the intensities of the deeper tones by darkening them while keeping the brilliance of the highlights, he can reproduce the effect his eyes have seen.





FLUORESCENT *lighting*

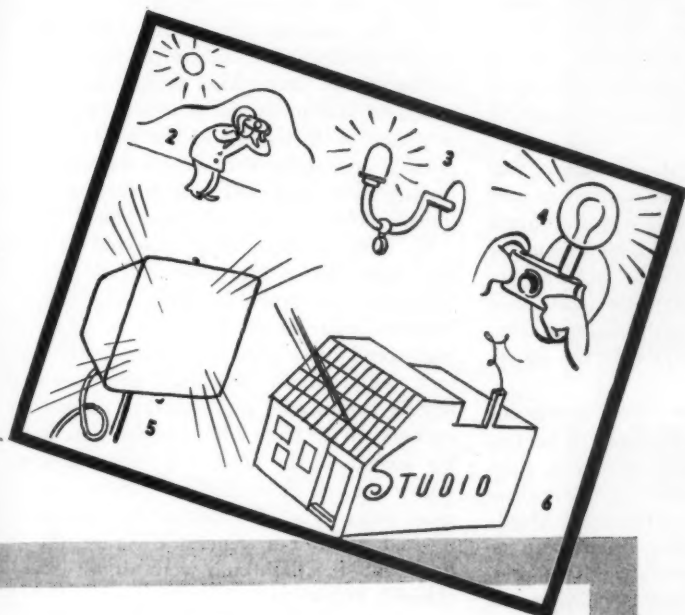
New light source increases efficiency 15 to 30 times. For amateur and professional use in studios and enlargers. Permits brief exposure in color work.

ANY review of the evolution of photographic lighting must begin with sunlight, the primary light source of photography. All photographs, contact prints and enlargements once were made with this medium. The north skylight that followed was soon superseded by the gas light. The ultimate in gaslit lamps for enlarging work was attained with the introduction of the Wellsbach gas mantle.

There succeeded the carbon-arc light which was generally acclaimed as the answer to the photographer's prayer. With its advent, sunlight, the north skylight and gas light went into the discard. The carbon-arc found quick acceptance in the studios and printing rooms despite some mechanical disadvantages which were readily discounted because of the pronounced superiority of the light. Old-timers will recall the carbon-arc lamp known as the "Aristo", a monstrous lamp employed for both studio and enlarging work that sputtered and flickered grotesquely.

The most realistic approach to a satisfactory light was the Cooper-Hewitt mercury-vapor tube introduced when the carbon-arc was in its heyday. It was clean, comparatively rapid, constant, cool and more

BY JACK PRICE WITH ILLUSTRATIONS BY G. E. AND THE AUTHOR



1. An inner coating of fluorescent powder is the secret of the new fluorescent lighting tubes (previous page). The hand indicates a tube, only half of which has been coated to show the difference in illumination.

2. Sunlight, photography's primary light source, once not only provided illumination for taking pictures but also for making contact prints and enlargements.

3. Gas lamps for enlarging and contact printing permitted photographers to work on dull days or at night.

4. Flash bulbs now provide "bottled sunlight" to permit pictures which never before were possible.

5. The carbon arc once was hailed as the answer to the photographer's prayer. Despite mechanical disadvantages it still finds uses.

6. The north skylight which once provided all or most studio illumination has been superseded by modern artificial light units.

7. Fluorescent lighting is as great an advance today as the carbon arc, Cooper Hewitt lamp, flood and flash bulbs were in their days. This snapshot of Carmen Miranda who appears in color on the inside cover was taken with the illumination of two fluorescent units and an exposure of 1/50th second at f11. How the inside color cover was photographed is told at the close of this article.

7



practical than any of its predecessors. Its pre-eminence over any light of the transition period is illustrated by its retention as the lighting element in many of the studio and enlarging lamps of today.

The high-wattage Mazda lamps that followed, deficient as they were when used with the color-blind and orthochromatic emulsions of the period, and despite the fact that more units were required for exposures, nevertheless found immediate favor with the profession because of compactness and easy portability for all interior work.

Manufacturers also were developing emulsions of increased speed. The first panchromatic film was somewhat slow, but nevertheless faster than the orthochromatic emulsion when used with the Mazda lamp. Progressively, film speeds were accelerated to the effective rapidity of present-day super-panchromatic emulsions and photographers were obtaining constantly better pictures with the Mazda lamp. Lamp manufacturers, too, were steadily stepping up lamp power in terms of light intensity and, conversely, reducing bulb sizes. Numerous special lamps were developed for various photographic uses and processing.

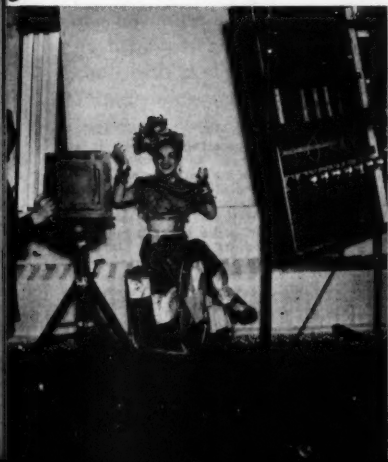
When miniature photography became popular, the lamp assumed a new importance. All enlargers for miniature films were equipped with tungsten-filament bulbs. Professional and amateur photog-

raphers alike employed them for exposures. The insistent demand for a light of greater intensity for indoor photography produced the photo-flood lamp. In this, increased luminosity was achieved without any increase in the size of the bulb. This notable accomplishment swept the entire photographic field and greatly facilitated indoor motion picture photography.

In 1930 the flash-lamp appeared as a new light source for instantaneous photography. Its practical application was, however, more or less restricted to taking high-speed news photos. Subsequently it met with almost universal acceptance among commercial and amateur photographers. With color photography now in the ascendent, the need of a correct light source became increasingly apparent. Almost every type of lighting was experimented with. For general coverage the flood and the flash-bulb were almost exclusively employed.

Now a hiatus developed during which there were no conspicuous contributions in the field of photographic lighting until the epochal announcement by the General Electric Company that its scientists had developed a practical fluorescent light.

The phenomenon of fluorescence is centuries old. Numberless rocks, chemicals, organic and inorganic substances have the property of becoming luminous when exposed to certain radiation. Fluorescent substances used in lamps absorb ultra-



violet energy and re-radiate it in the longer wave lengths visible to the eye.

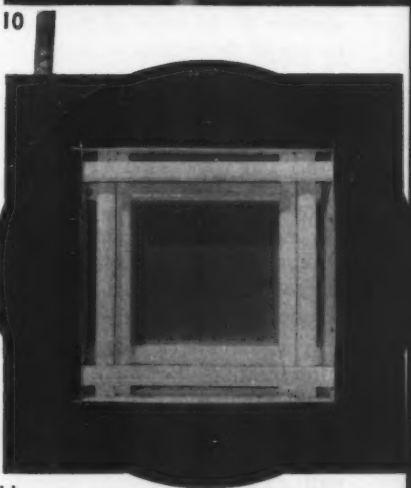
While the idea of a fluorescent light source has engaged scientists for a long time, the problem of developing a practical lamp has been far from simple. Such a lamp depends on a flow of electrons between two electrodes. The ability of gas or vapor to become luminescent, that is, to emit light under the influence of the flow of electrons through it, is due to a collision of the speedy electrons with the atoms of the gas. When these encounters occur, an excitation takes place, which in the case of the excited gas produces light.

In the colored fluorescent lamps, the objective was merely to produce a range of pleasing colors, but in the daylight lamp, the objective was to duplicate the whiteness of natural daylight specified by color temperature as 6500 degrees Kelvin. This means distributing the energy throughout the colors of the spectrum as closely as possible to that occurring in daylight. This is accomplished by a proper blending of powders or "phosphors" within the lamp.

The fluorescent lamp without its coating of powder is essentially a transparent glass tube containing a small drop of mercury and a small amount of argon gas to facilitate starting. Mercury is used as the conducting vapor because of its high efficiency in the production of the ultraviolet radiation that activates the phosphors with which the inside of the lamp is coated.

Study of the development of a practical fluorescent light was initiated at the General Electric laboratories under the direction of George E. Inman, development engineer. Its commercial feasibility comprehended a co-ordination of the efforts of the physicist, the chemist and developments in lamp-making technique. Included in these multiple considerations were: A theoretical outline of conditions for the generation of ultraviolet radiant energy gauged to act efficiently on practical fluorescent substances; the chemical production of fluorescent materials that would react most favorably to practical sources of radiation; and a co-ordination of both to achieve the best combinations to be incorporated in a lamp suitable for convenient operation on lighting circuits of established voltage.

With these factors established, the work of the laboratory staff proceeded systematically. Play-



8. Jack Price snapped in the studio while Kodachroming MINICAM'S inside cover. At the right may be seen the back of one of the professional size fluorescent lighting units (on p. 28).

9. Any number of tubes may be used in a fluorescent lighting unit. The general softness of the illumination is indicated by this snapshot in which the camera found no difficulty in photographing the glowing tubes and a camera subject at the same time.

10. Coating the inner walls of a fluorescent tube. A thin coating of powder, carefully compounded and mixed, provides the source of the fluorescence.

11. Enlarger illumination as provided by fluorescent tubes. Front view of a housing for an 8x10 enlarging camera made by Saltzman, Inc.

ing an important role in the chemical phases of this development was Dr. Willard O. Roberts, Ph.D., to whom was entrusted the responsibility of discovering the various compounds or phosphors, commonly referred to as "powders," with which the lamps are coated. Assisting him was Hannah Geissbuhler, a Western Reserve graduate in chemistry, whose function was to mix the various ingredients for these as specified in the formulas established by Dr. Roberts.

It is somewhat of a paradox that irrespective of the color of the light emitted by any of the fluorescent lamps all coating phosphors are white. These powders when dissolved are of heavy consistency. They are poured into the slowly rotating tubes and then set aside for drying, after which they are turned over to Richard M. Thayer, a physicist, who equips them with the necessary electrodes, charges them with argon gas, introduces the drop of mercury and tests them for light characteristics and operating efficiency.

It was approximately a year ago that a lamp meeting all of the rigid requirements of the laboratory was completed. To determine its application to photography Robert E. Worstell and Ralph Farnham, staff electrical engineers, expert photographers and lighting counsellors to the motion picture industry, embarked on a series of tests that literally gave the light the works. Their first experiments with the fluorescent lamp as a light source were confined to black and white. These indicated unmistakably that this light is destined to revolutionize some phases of photographic illumination.

Because of its size and shape, the fluorescent lamp does not produce a concentrated beam of light for use in spotlights and other projectors. It is recommended that photobulb tungsten-filament lamps be used to supplement the fluorescent units. Clear-bulb tungsten-filament lamps were recommended for auxiliary lighting in conjunction with the white fluorescent lamp.

Since the daylight lamp has spectral

qualities similar to daylight and the white lamp is similar to a high efficiency tungsten source, the speed rating of the emulsion designated for daylight and tungsten may be used. Density of negatives may be achieved by the required variation from the normal rating.

In experiments conducted by the author and employing a single bank of eight 48-inch fluorescent tubes, pictures were taken with a 4x5 Speed-Graphic fitted with f/4.5, 13.5 cm. lens on Super-press Orthochromatic and Panchromatic film at 1/50th of a second with a lens aperture of f/6.3. All negatives were fully timed. A white cloth reflector was used on the shadow side of the subject, resulting in a transparent shadow. This was due to the soft quality of the fluorescent light which eliminates harsh shadows.

Further experiments conducted in the studios of the author and employing Dufaycolor film indicated that the light holds high promise as an illuminant in this type of photography. Dufay film was used in these experiments because it could be processed immediately and progressive records made as the work advanced. In operating under the fluorescent light with Dufaycolor film, the routine outdoor procedure was followed. Daylight Dufay film was used with the filter prescribed for it, and excellent results were obtained.

Of all the artificial light sources, the fluorescent lamp emits the highest actinic ray for photographic purposes. When using it no diffusing screen is required. This is a decided advantage as such screens sacrifice approximately fifty percent of the light. A fluorescent unit does not have the "carrying power" of tungsten-filament or arc equipment. "Carrying power" may be defined as candle power in a given direction. With a concentrated source of high brightness a high candle power is possible. As this cannot be attained with the fluorescent lamp alone, a combination of sources having a relatively high degree of concentration and the fluorescent lamp appears to provide the required carrying power.

Undoubtedly this new light source will be heralded as a boon to all photographers. Its advantages are many. With it the photographer may, for the first time, photograph subjects naturally and without any of the manifestations of discomfort and self-consciousness incident to posing under concentrated and extremely hot lights. Under the comparatively heatless and glareless fluorescent lamp complete relaxation in a comfort heretofore unknown is decidedly possible.

The grimacing and squinting common to photography under the more powerful lights in contemporary use are eliminated when fluorescent light is substituted. Weak eyes particularly sensitive to strong light will not water nor inflame under the benign fluorescent; nor will the tongues of pet animals whose pictures are being taken loll from dripping mouths as they do under the stronger Mazda and arc lights. Babies and children are less restless and are photographed with a total absence of the startled and stareyed expression that usually accompanies the use of more powerful lights.

Commercial photographers should welcome it as the fulfillment of a long-awaited need. Models posing for long stretches under fluorescent light have shown a conspicuous absence of physical strain. Make-up does not run, and outer and under garments retain form and freshness impossible under lights that induce perspiration. The temperature of air-conditioned studios is negligibly affected by the low temperature fluorescent. Thus rated and uniform performance of film is assured. It is the coolest light ever developed for enlarging work. With it wet negatives may be printed without the fear of damage to film that usually attends the use of the hotter lamps. The light is even, and though a trifle slower in speed, it produces better results. Oddly, it reacts to the paper emulsions much better than might be expected.

The blue fluorescent lamp is, watt for watt, between fifteen and thirty times as

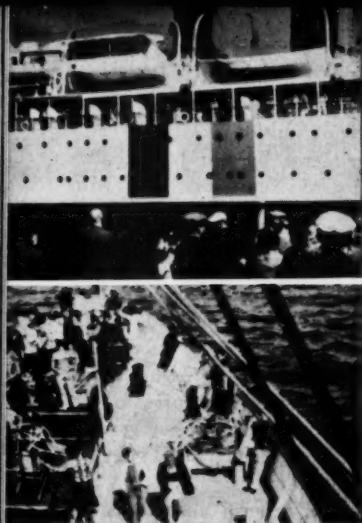
effective as the tungsten-filament lamp with some paper emulsions.

Early experiments by the J. G. Saltzman Company of New York City with the fluorescent light for enlarging and color work demonstrated its practicability beyond all reasonable doubt. Many methods for adapting the light to the projector were tried. The method finally adopted employs eight 18-in. tubes in a double square housed to cover an 8 x 10 negative. This has been found highly satisfactory for all-round photographic enlargements, and particularly effective for color separation.

With its wider general acceptance by professional and amateur photographers as a lighting medium, it is logical to expect that appliance manufacturers will devise a variety of portable and studio units for these lamps. The fluorescent lamp family produced by the General Electric Company consists of the 18-in., 15-watt; the 24-in., 20-watt; the 36-in., 30-watt.; and the 48-in., 40-watt tubes. The 18-in. and 24-in. sizes are recommended for amateur use, and the larger tubes for professional work.

Since the standard for all lighting in photography is daylight and since the fluorescent light is the closest approximation to true daylight ever synthetically produced, it is no extravagance, I feel, to predict that it will ultimately supersede all other forms of artificial lighting for photographic purposes.

Fluorescent lighting for color photography. Carmen Miranda, star in the current Broadway success, "Streets of Paris," could easily be called a most popular photogenic subject. In making the color photograph (see Page 2) a new lighting technique was employed. The daylight type fluorescent lamp has a color rating of 6500 degrees. It is comparable to the north sky daylight which is rated at 10,000 degrees. The light source was divided into three units, one with eight tubes and the others with four tubes each. The tubes are the forty-eight inch forty-watt lamps. (Page 114, please)



1

2



3

T O R P E D O -

DEADLOCKED on land, World War II is being fought out on the high seas. Lack of pictures makes the most sensational war the world has ever seen also the most mysterious.

"Liner Sunk," "Battleship Bombed," "Commerce Raider Reported"—these are the cryptic headlines which furnish the only known clue to the desperate struggle for control of the seas.

To satisfy public curiosity without revealing information about the whereabouts of their fleet, an European government has just completed a movie called "Torpedoed," purporting to tell the complete story of the sinking of an ocean liner, from beginning to end. What the movie does not tell is that it could easily be faked by means of a clever combination of authentic shots, like Figs. 1 and 2 (above) combined with model shots, as illustrated on next page.

by

LUKE HAMMER

ILLUSTRATED by C. ANDERS

1
"Bon Voyage." At the pier, a war-thinned crowd of friends and relatives wave fond farewell as the steamer slowly casts off.

2
At sea, fine weather brings travelers out on deck. Thoughts of submarine and airplane attacks are left behind.

3
Steadily on her course, the snug little passenger liner ploughs along her destined course on a calm sea. Passengers are listening to a radio concert. The crew is playing cards in the fore-castle, when suddenly—

4
—suddenly there is a terrific impact. Passengers are thrown to the deck. The force of the explosion hurls fragments of wood and steel into the air to fall back with the force of a bombardment.

5
In a few minutes the engine room is flooded. The bow already is awash.

6
Later, on a distant shore, fragments of the ill fated vessel give the only clues to its tragic and mysterious disappearance.



4

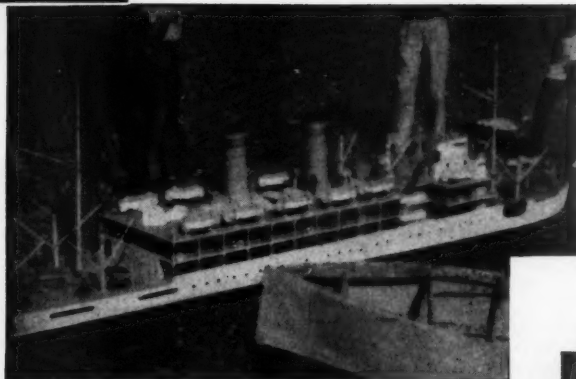


5

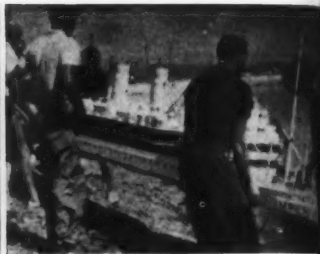


6

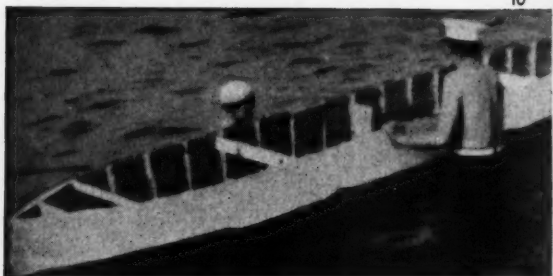
(7) Every day sees new and mysterious disappearances at sea. This cameraman's job was to pictorialize the complete story of an ocean liner officially listed only by the laconic word, "Unreported." (8) Assembling the miniature model. (9) Carrying the superstructure into the water. Its accuracy of detail allows the miniature model to successfully simulate a real liner. (10) The hull is weighted down with sand bags. (11) The finishing touches. (12) The miniature model will look like the real thing as soon as the people move out of camera range, and then filming can begin, of the sequence shown on the previous page, to pictorialize the story of a tragedy at sea.



8



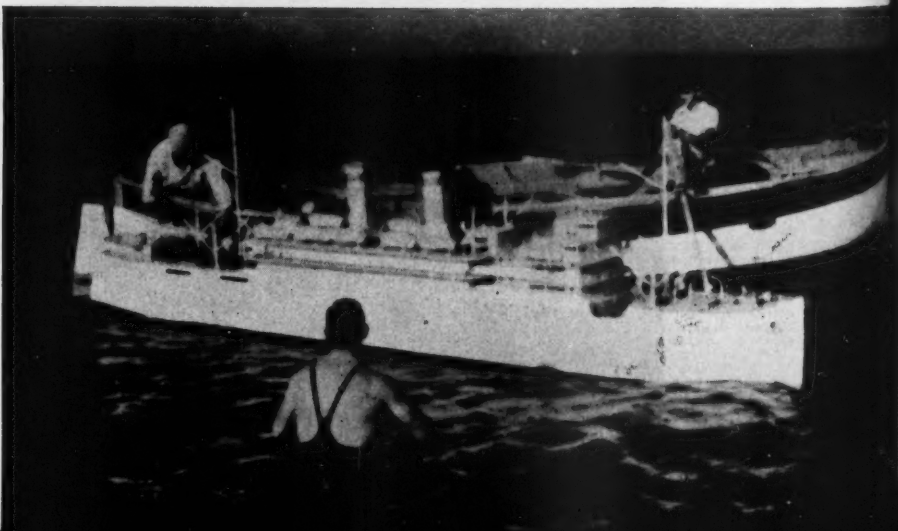
9



10



11



12

N
S
cur
wit
effi
equ
niza
wh
the
ture
bro
on
T
sive
and
ing
com
sale
toge
pay
S
ture
and
inc.
Age
and
ally
ager
well
If
mar
synd
type
clud
the
the
your
five
less
ture

Can agencies sell **YOUR PICTURES?**

Knowing where to find markets and how to handle sales is the first step in turning pictures into dollars.

MANY photographers, amateur and professional, do not market their own photographs.

Selling photographs demands an accurate knowledge of, and close contact with the markets and therefore can be efficiently done only by an organization equipped to cover the field. These organizations are of two types, the *syndicate* which buys photographs outright, paying the photographer a flat sum for each picture purchased, and the *photograph broker or agent* who sells photographs on a commission basis.

The *syndicate* usually purchases exclusive rights to a photograph or negative and sends prints to its customers, collecting a fee from each one but paying no commission to the photographer on these sales. The picture agency accepts a photographer's prints, tries to sell them and pays the photographer when they are sold.

Syndicates usually buy spot news pictures (news of immediate importance) and rotogravure features. Their markets include newspapers and magazines. *Agents* handle news, features, publicity, and general subjects. Their market is usually wider in scope, including advertising agencies and book-publishing houses as well as newspapers and magazines.

If you need someone who knows the market to push your pictures, choose a *syndicate* or *broker*, depending on the type of material you have, and write, including samples of your work. Describe the types of pictures you make and give the organization some idea concerning your rate of production—do you make five pictures a month or five hundred. Unless you are making *newspictures*, a picture broker will be better able to help

you than will the *syndicates*. The pictures handled by *brokers* are usually called "stock" pictures, since they are kept on file until a definite order for them is received from a buyer. Stock pictures include anything and everything from travel, snow crystals, photomicrographs, and animals to men in business offices, babies, and beautiful women.

If you decide to let an agent handle your pictures, put the terms of the agreement into writing, so that there can be no misunderstanding later. The agreement should include minimum prices to be asked for photographs, the amount of commission, and whether or not the agency is exclusive.

Basic prices for pictures are:

Editorial use, \$2.50—\$25, depending upon subject matter, timeliness, availability of material, etc.

Advertising—Local, \$10 up; National, \$25 up.

The usual commission charged is 50% which takes care of selling, agency postage, etc., but not the cost of making prints when negatives are submitted.

Beware of agencies which require a membership fee or try to sell special services or gadgets. A few of these are honest organizations, but many of them belong in a fly-by-night classification.

Some Syndicates and Photographic Agencies

Acme Newspictures, Inc., 220 E. 42nd St., New York, N. Y. Syndicate buying spot news and rotogravure features.

Alexander News Service, P. O. Box 926, Denver, Colo., Store windows and interiors, inventions, oddities, also articles to 2,000 words.

Anders, C. & Co., 122 E. 42nd St., New York, N. Y. Features.

Apex Newsphotos, Inc., Continental Bldg., Fort Worth, Texas. Commission basis.

Associated Tradepaper Writers, Nat. Press Bldg., Washington, D. C. Pictures and articles on subjects of interest to business publications. Commission basis.

Associated Midwest Newspaper Syndicate, Inc., 160 N. La Salle St., Chicago, Ill. News features.

Associated Press News Photo Service, 383 Madison Ave., New York, N. Y. Spot news and roto features.

Atlas Photos, 45 West 45th St., New York, N. Y. Photographs of general interest, features. Commission basis.

Authenticated News, Times Building, New York, N. Y. News.

Authenticated News Service, P. O. Box 326, Hollywood, Calif. Hollywood and motion picture photographs and articles.

Bain News Service, 255 Canal St., New York, N. Y. News and celebrities.

Ella Barnett Photos, 446 West 22nd St., New York, N. Y. Ship news and celebrities. Commission basis.

Bartlett Service, 637 Pine St., Boulder, Colo. Business features and news. Commission basis.

Black Star Publishing Co., 420 Lexington Ave., New York, N. Y. General subjects, features. Commission basis.

Business News Bureau, Route 7, Huntington, Ind. Trade-paper features, photographs with or without articles. Buy outright or sell on commission.

Central Feature News Service, Times Building, Times Square, New York, N. Y. Exclusive news material only. Buy outright.

Central Press Association, 1435 E. 12th St., Cleveland, O. News articles and photographs bought outright.

Collyer's News Bureau, 300 W. Adams St., Chicago, Ill. Sports news and features.

Consolidated News Features, Inc., 280 Broadway, New York, N. Y. Interested in series of unique or strange things on the order of "Believe It or Not."

Crown Foto Features, 10 W. 47th St., New York, N. Y. Features.

European Picture Service, 353 Fifth Ave., New York, N. Y. News, feature, and general subjects for the American and foreign markets. Also specializes in marketing natural color photographs. Buy outright or sell on commission basis.

Fact Feature Syndicate, 17 Vanderbilt Road, Manhasset, N. Y. Subjects of popular interest, illustrated stories.

Feature Sales Syndicate, 540 N. Michigan Ave., Chicago, Ill. Striking photographs on any subject. Buy outright.

Free Lance Photographer's Guide, 219 E. 44th St., New York, N. Y. Features and pictures of general interest.

Galloway, Ewing, 420 Lexington Ave., New York, N. Y. Any and every subject. No news or articles. Buy outright.

Gendreau, Philip D., 369 Lexington Ave., New York, N. Y. Photographs of exceptional merit—sports, children, travel. Buys outright.

Globe Photos, 33 W. 42nd St., New York, N. Y. General subjects, features. Commission basis—60% charged.

Graphic Features, The McAlpin, New York, N. Y. Sets of story-telling pictures.

Hollywood Press Syndicate, 6605 Hollywood Blvd., Hollywood, Calif. Market foreign rights to articles and photographs of general interest. Commission basis.

Holmes Feature Service, 135 Garrison Ave., Jersey City, N. J. Features of general, industrial, or scientific interest. Buys outright or sells on commission.

Intercontinents News Photos, 11 W. 42nd St., New York, N. Y. Features, news.

International Photo Features, 61 Hamilton Place, New York, N. Y. General subjects and features.

Jordan Syndicate, Albee Building, Washington, D. C. Photographs and articles of general interest. Buys outright.

Keystone Press Feature Service, Ltd., 130 W. 46th St., New York, N. Y. News and human interest, celebrities.

Keystone View Co., 219 E. 44th St., New York, N. Y. Human interest, features, news.

King Features Syndicate, Inc., 235 E. 45th St., New York, N. Y. Travel photos and articles, specialized subjects.

Lukens and Pattison, P. O. Box 731, New Haven, Conn. Human interest, farm, features. Buy outright.

Monkemeyer Press Photo Service, 225 Fifth Ave., New York, N. Y. Features.

Nesmith, Robert I. & Associates, 50 E. 42nd St., New York, N. Y. Features and photographs of general interest.

News Service Bureau, Box 497, Dayton O. Illustrated articles and features. Buy outright or sell on commission basis.

Pan American Pictures, Albee Building, Washington, D. C. Features suitable for use in Latin America that might serve the purpose of creating better friendship between the peoples of the Americas. Buy outright or sell on commission.

Paul's Photos, 537 S. Dearborn St., Chicago, Ill. Nature and human interest. Buy outright or sell on commission.

Pictorial Feature Service, 11½ E. 49th St., New York, N. Y. Human interest photos. Buy outright.

Pix Publishing, Inc., 250 Park Ave., New York, N. Y. Features, human interest, people in the news. Buy outright or sell on commission.

Register and Tribune Syndicate, Des Moines, Iowa. Exclusive feature series. Buy outright.

(Page 102, please)



MOST salon prints lack the human interest touch necessary to net sales, but here is a picture that is beautiful from the practical as well as esthetic standpoint. From the 83rd Annual International Salon of the Royal Photographic Society, shown in the U. S. under the auspices of the Oval Table Society, the title is "Happy Youth," by Miss Lisel Haas.

Anders, C. & Co., 122 E. 42nd St., New York, N. Y. Features.

Apex Newsphotos, Inc., Continental Bldg., Fort Worth, Texas. Commission basis.

Associated Tradepaper Writers, Nat. Press Bldg., Washington, D. C. Pictures and articles on subjects of interest to business publications. Commission basis.

Associated Midwest Newspaper Syndicate, Inc., 160 N. La Salle St., Chicago, Ill. News features.

Associated Press News Photo Service, 383 Madison Ave., New York, N. Y. Spot news and roto features.

Atlas Photos, 45 West 45th St., New York, N. Y. Photographs of general interest, features. Commission basis.

Authenticated News, Times Building, New York, N. Y. News.

Authenticated News Service, P. O. Box 326, Hollywood, Calif. Hollywood and motion picture photographs and articles.

Bain News Service, 255 Canal St., New York, N. Y. News and celebrities.

Ella Barnett Photos, 446 West 22nd St., New York, N. Y. Ship news and celebrities. Commission basis.

Bartlett Service, 637 Pine St., Boulder, Colo. Business features and news. Commission basis.

Black Star Publishing Co., 420 Lexington Ave., New York, N. Y. General subjects, features. Commission basis.

Business News Bureau, Route 7, Huntington, Ind. Trade-paper features, photographs with or without articles. Buy outright or sell on commission.

Central Feature News Service, Times Building, Times Square, New York, N. Y. Exclusive news material only. Buy outright.

Central Press Association, 1435 E. 12th St., Cleveland, O. News articles and photographs bought outright.

Collyer's News Bureau, 300 W. Adams St., Chicago, Ill. Sports news and features.

Consolidated News Features, Inc., 280 Broadway, New York, N. Y. Interested in series of unique or strange things on the order of "Believe It or Not."

Crown Foto Features, 10 W. 47th St., New York, N. Y. Features.

European Picture Service, 353 Fifth Ave., New York, N. Y. News, feature, and general subjects for the American and foreign markets. Also specializes in marketing natural color photographs. Buy outright or sell on commission basis.

Fact Feature Syndicate, 17 Vanderbilt Road, Manhasset, N. Y. Subjects of popular interest, illustrated stories.

Feature Sales Syndicate, 540 N. Michigan Ave., Chicago, Ill. Striking photographs on any subject. Buy outright.

Free Lance Photographer's Guide, 219 E. 44th St., New York, N. Y. Features and pictures of general interest.

Galloway, Ewing, 420 Lexington Ave., New York, N. Y. Any and every subject. No news or articles. Buy outright.

Gendreau, Philip D., 369 Lexington Ave., New York, N. Y. Photographs of exceptional merit—sports, children, travel. Buys outright.

Globe Photos, 33 W. 42nd St., New York, N. Y. General subjects, features. Commission basis—60% charged.

Graphic Features, The McAlpin, New York, N. Y. Sets of story-telling pictures.

Hollywood Press Syndicate, 6605 Hollywood Blvd., Hollywood, Calif. Market foreign rights to articles and photographs of general interest. Commission basis.

Holmes Feature Service, 135 Garrison Ave., Jersey City, N. J. Features of general, industrial, or scientific interest. Buys outright or sells on commission.

Intercontinents News Photos, 11 W. 42nd St., New York, N. Y. Features, news.

International Photo Features, 61 Hamilton Place, New York, N. Y. General subjects and features.

Jordan Syndicate, Albee Building, Washington, D. C. Photographs and articles of general interest. Buys outright.

Keystone Press Feature Service, Ltd., 130 W. 46th St., New York, N. Y. News and human interest, celebrities.

Keystone View Co., 219 E. 44th St., New York, N. Y. Human interest, features, news.

King Features Syndicate, Inc., 235 E. 45th St., New York, N. Y. Travel photos and articles, specialized subjects.

Lukens and Pattison, P. O. Box 731, New Haven, Conn. Human interest, farm, features. Buy outright.

Monkemeyer Press Photo Service, 225 Fifth Ave., New York, N. Y. Features.

Nesmith, Robert I. & Associates, 50 E. 42nd St., New York, N. Y. Features and photographs of general interest.

News Service Bureau, Box 497, Dayton O. Illustrated articles and features. Buy outright or sell on commission basis.

Pan American Pictures, Albee Building, Washington, D. C. Features suitable for use in Latin America that might serve the purpose of creating better friendship between the peoples of the Americas. Buy outright or sell on commission.

Paul's Photos, 537 S. Dearborn St., Chicago, Ill. Nature and human interest. Buy outright or sell on commission.

Pictorial Feature Service, 11½ E. 49th St., New York, N. Y. Human interest photos. Buy outright.

Pix Publishing, Inc., 250 Park Ave., New York, N. Y. Features, human interest, people in the news. Buy outright or sell on commission.

Register and Tribune Syndicate, Des Moines, Iowa. Exclusive feature series. Buy outright.

(Page 102, please)



MOST salon prints lack the human interest touch necessary to net sales, but here is a picture that is beautiful from the practical as well as esthetic standpoint. From the 83rd Annual International Salon of the Royal Photographic Society, shown in the U. S. under the auspices of the Oval Tabble Society, the title is "Happy Youth," by Miss Lisel Haas.

THE STORY BE

Every successful photographer has his own methods, shortcuts and working secrets. This is the first of a monthly series in which well-known cameramen will give the "inside dope" on their work.

by

J. Ghislain Lootens, F. R. P. S.

PHOTOGRAPHS BY THE AUTHOR

HIKING is my favorite hobby. Every year I look forward to spending a few weeks outdoors, getting away from the city streets and breathing the crisp air which can only be found in the hills. The hiking hobby really developed through photography, for years ago I found that our best pictures are usually taken when on foot and without a car. So the picture, "Homecoming" (Fig. 3), is a direct result of a pleasant hiking trip.

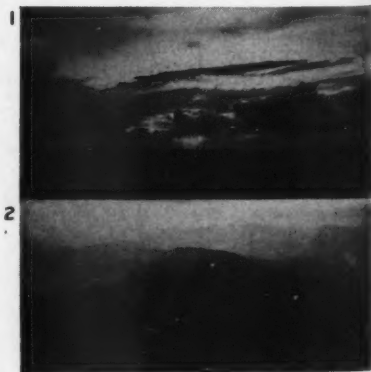
A friend and I some years ago spent our summer vacation in the White Mountains of New Hampshire, a region criss-crossed with trails, some so simple that ten-year-olds can navigate without difficulty, and others so planned as to cause difficulties even to an experienced Alpine climber. We had climbed Mt. Washington with the intention of photographing a sunrise or a sunset and, although we spent four days on the top of the peak, neither of these natural beauties made its appearance.

Another time, therefore, we returned to catch these spectacles, and on a sultry mid-July day we again found ourselves at the top of the 6,293-foot peak, delighted with ourselves after the climb. We wandered around a bit, taking in the view on all sides of the peak, and hoping the weather would co-operate for once. The day, however, was very bad, photographically. Whatever sun there was,

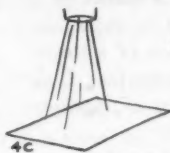
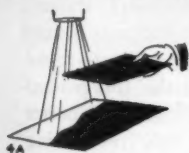
1. The sunset scene that was used to furnish the clouds in Fig. 3. Taken at Hackensack, N. J. Verichrome film, G2 (medium yellow) filter, 1/100th at f16.

2. The mountain scene, taken on Mt. Washington. Agfa Super Plenachrome film, G2 filter, 1/50th, f8.

3. "The Homecoming," has received wide recognition in many salons and exhibitions. It was produced by combining (1) and (2), as shown in Fig. 4.



HIND *the Picture*



was obscured by a dull grey sky in which not a cloud was visible. Down below in the valley it had been very warm, and even here on the mountain where the temperature is usually very cool my friend had felt the heat so much that he re-

4. (A) To make a combination print, enlarge the foreground while holding back the rest of the print area by dodging.
- (B) Remove the foreground negative from the enlarger, insert the sky negative, and print while dodging the lower area.
- (C) If the paper negative process is to be used, the dia-positive or transparency is enlarged to make a 11x14-inch paper negative by straight printing.
- (D) Retouching is done on the paper negative, and then a straight contact print made.

moved the light sweater which he had worn.

As I saw him standing looking down the long incline toward the Twin Lakes, he somehow reminded me of the Prodigal Son, weary and tired, coming home after a long journey. The "home" which he actually saw was the rather large quarters of the Appalachian Mountain Club located near the Twin Lakes. From the long distance at which we were viewing it, it appeared rather like a small hut. Anyway, the relaxed figure of my friend after the strenuous journey, plus the home in the far distance, enabled me to visualize the whole picture in a flash. Asking him to hold the pose, I placed him in the viewfinder so that the figure later on would be in the right position for the composition I had in mind.

I realized that the lighting conditions and the time of day were very much against making a real picture out of it—except through the process I had in mind—and that was the use of a paper negative. The sentimental type of picture which "Homecoming" represents is greatly helped by the broad textural rendition which results from the use of a paper negative. Also, to give it a more dramatic tone I intended to change the time of day from noon to, say, late evening—somehow there seemed nothing very sentimental about twelve o'clock noon, but a setting sun seems to call for home-wending footsteps. Anyway, I was still thinking that we had come to do either a sunset or a sunrise. I felt all I needed to make the job complete was the addition of a sunset cloud negative—and that negative I already had in my files, taken in Hackensack, N. J.

It actually was months later before I had an opportunity to carry the picture into reality. Looking around for suitable material for a class demonstration of the paper negative process, I thought this could serve as a good illustration.

In the first step, the two negatives, the one of my friend in the foreground portion, and the cloud negative representing

the sky portion, were both enlarged on a 5 x 7 Eastman commercial cut film. This combination work was done in the usual method of determining the correct exposure for each portion on test strips which were developed for an equal length of time. The correct exposure in each case was 15 seconds at f16.

The foreground negative was printed on the film while the top portion was protected by dodging. Removing the foreground negative, the cloud negative was inserted in the enlarger and that, in its turn, was printed on the same film, while protecting the foreground by suitable dodging.

This combination gave me a positive on film, similar to a lantern slide but about three times darker in density. This transparency, or positive, was then in its turn placed in the enlarger and projected on an 11" x 14" single-weight matte paper for 40 seconds at f45. This paper was developed for two minutes in an ordinary Metol-Hydroquinone developer, resulting in a paper negative of normal contrast.

On the paper negative most of the retouching was done, for the simple reason that anyone, even with a very limited knowledge of retouching, can perform all sorts of stunts with paper whereas it would be rather difficult to do this on film.

To get away from a modern effect, the knickers were removed and the long trousers put in. This was done by a combination of pencil and knife work. Pulverized artist's chalk with a chamois stump was used on portions of the valley to make such areas lighter so that the foreground would appear stronger, creating a better atmospheric effect. All this retouching should preferably be done on the face of the paper negative rather than on the back; however, if necessary, both sides of the paper can be worked on, always remembering that if most of the work is done on the back of the paper negative there may be a change in the texture when the final print is made.

(Page 100, please)

Test your Shutter

By **RAYMOND CHARLES CRIPPEN**

Chemical Technologist, Iowa State College



1



2

(1) Black cloth thumbtacked to a board marked off in inches is supported against a wall while the photographer focuses his camera. When the camera is set, a ball is dropped from zero and the photographer snaps the shutter, making a record of the shutter speed. The ball is recorded as a bright streak against the background. In the above, the streak can be seen extending from 29 to 32 inches.

(2) Closeup of a shutter test showing the ball as a streak extending from 31 to 35 inches.

CAMERA shutters vary greatly and sometimes even high-priced, precision instruments have shutters which are as much as 50 or 100 percent off.

Test your shutter and make a record of its actual speeds for use in obtaining accurate exposures.

Camera shutters can be tested without special equipment. It is only necessary to photograph a falling object and then measure the distance of the fall.

All that is needed is a board marked off in inches, a dark background and a ball of contrasting material to show up against the background. The ball can be white-washed or metal polished with oil.

A print is made or, better yet, the negative is examined with a magnifying glass. Let us say, for example, that the ball during the exposure fell from the 4-foot mark to the 5½-foot mark.

For finding the shutter speed it is only necessary to calculate the length of time it took the ball to reach the 5½-foot mark (6/10th of a second) and from this subtract the time taken to reach the 4-foot mark (5/10ths of a second), leaving 1/10th of a second, the actual shutter speed of this example.

Step 1. To calculate the first time, divide the distance which the ball fell in feet (4 ft.) by 16. Four divided by 16 equals 1/25.

Step 2. Take the square root of .25. This is .5. (.5 times .5 equals .25.)

This means that it took the ball .25 seconds to fall 4 feet.

Follow the same procedure for the end of the ball's fall.

Step 1. Five and a half divided by 16 equals .34.

Step 2. The square root of .34 equals approximately .6. (.6 times .6 is equal to .36.)

This shows that it took the ball 6/10 second to fall 5½ feet.

Now simply subtract 5/10 from 6/10 and the result is 1/10 of a second, the length of time the shutter was open.

For mathematicians the formula is $S = \frac{1}{2}at^2$ where S is the distance of the ball's fall in feet, t is the time of the fall in seconds, and a is the acceleration due to gravity or 32 feet per second.

LEGS

Legs may be incidental details in most pictures, but they are "cheesecake" to the newsmen, and "bread and butter" to commercial photographers



THE importance of legs in any picture makes them worth studying and photographing as a separate subject. One of the most effective ways to light legs, especially when the model is standing as in Fig. 3, is to back spot with spotlights from both sides and front flood from both sides with medium diffusion, just enough to hold the detail bright and clear. Be careful not to let one leg cast an undesirable shadow on the other. This picture is an example of action both expressed and implied. The tipped toe tells us that the girl is not standing still and the spreading border of the petticoat suggests the struggle to get into that garment. A good picture suggests more than it actually shows.

In photographing the entire figure with accent on the legs, as in Fig. 4, let the legs tell the story. They can express the model's delight at that invitation as well as her face. Two floods were placed on either side of the camera a little above eye level. One spot was used behind the girl's head. The couch cover and negligee were the same color but the design in the cover served to separate the two.

In candid and outdoor pictures, the photographer takes what he can get when he can get it. However, nothing can usurp the charm of a spontaneous picture. If there is an opportunity, arrange a reflector to light the heavy shadows. The dark side can also be lightened by placing the subject near a sun-reflecting surface such as a light wall.

Unfortunate was the shot of Miss America 1939, Fig 1, taken on the Steel Pier at Atlantic City the day after she had been crowned Queen. The sun was shining until the photogra-

(1) Miss America, 1939, posed for this outdoor picture when the sun was under a cloud. Speed Graphic camera, Superpan Press film, f/8, 1/25th second.

(2) (Right-hand page) "... and the mouse frightened her away." Normal reactions make the best pictures. Agfa Triple S Pan cut film, f/11, 1/10th second.

By ALLAN RICHARDSON--ILLUSTRATED BY THE AUTHOR



pher's turn came. At that moment it went behind a cloud, so the result was flat. Sunlight and some shadow are requisites for well-modelled leg photographs.

Normal reactions make the best pictures. Why not try the mouse trick on your favorite model? Tell her you wish to take a lovely leg picture and to raise the skirt—so. Place the camera on the floor and two floods on either side near the floor. Add two backlighting spots on either side behind the model. Standing on a stool or hassock will heighten the dramatic quality. When everything is ready throw the mouse (Woolworth's 10c) into the arena with a dramatic touch.

When in doubt about enough light to make rapid, action-stopping exposures, use a single flash light aimed at the model's waist from about a foot above the floor. Fig. 2 was posed because the model is a

good actress but candid results may be just as interesting.

The purpose of the pose in Fig. 5 is to show beautiful stockings on beautiful legs for a stocking advertisement. With commercial illustrations, every possible detail must be brought out. The lighting used in this shot is known as the "one, two, three." There are three definite and distinct tones on the legs: highlight, middle tone, and shadow. Tone range must be cut in order to get good reproductions when printed and each tone must be well separated from the others. Light rugs are good reflectors and contrast for dark shoes.

There are points in make-up for legs which every photographer should know. Unless the legs are shaven, the picture will have an airedale look. A little powder will cover shiny shins and Nos. 26 or 27 grease paint makes corns and calouses disappear.

It is a good idea to plan in advance

3





4

with pencil and paper. Draw several rectangular boxes, both vertical and horizontal, to represent the picture format. In the first box sketch two lines for the legs: sketch them in relation to each other and the confined area. You need not be an artist, the simplest lines will do. Repeat with different arrangements and starting points in each rectangle. Select the best arrangements and under each jot down the following:

1. Exactly what action or idea you wish to express, i.e., dancing, walking, etc.
2. Type of lighting best suited to express it.
3. Color or tone of accessories such as

shoes, stockings, and garments, if any.

4. Available background against which these will stand out.

Photograph dancing, running, walking, leaping, swimming, kicking legs and make them tell their story. Try candid shots first. Many of them, although not well lighted, will aid you in determining correct poses in the home studio. In this way you can use your camera as an artist uses his sketch book to find desirable material for future pictures you will make.

(3) Action is expressed by the tipped toe and suggested by the spreading border of the petticoat. Studio View camera, Agfa Triple S Pan cut film, f16, 1/5th second.

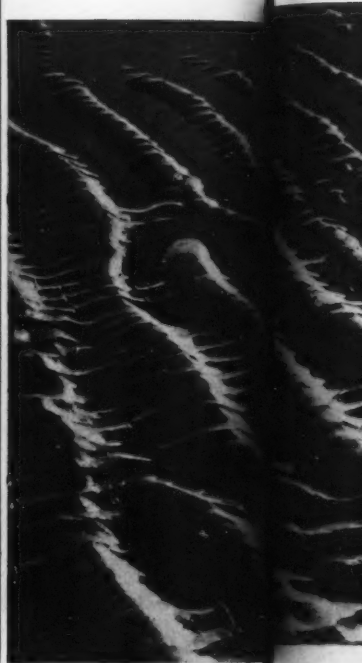
(4) Legs can express emotions. These express happiness equally as well as the girl's face. View camera, Agfa Triple S Pan cut film, f16, 1/5th second.

(5) Good separation of tones is necessary in a photograph for a hosiery advertisement. Studio View, 5x7", camera, Agfa Triple S Pan cut film, f16, 1/5th second.





1



CAPTURE THE "LIFE" OF

TH

"I haven't been traveling," we hear our friends say, "so I haven't taken any pictures lately. At home, everything looks the same!"

A man living in Holland a few hundred years ago, named Rembrandt, didn't "get around" very much either, except for an occasional trip from the little town of Leiden to Amsterdam. Nevertheless, his paintings are among the greatest ever produced.

Photographers are no painters and certainly no Rembrandts, but like the painters, they must learn to see old things in new ways.

Use your eyes before going to your camera. Consider whether you want a closeup or whether some space around the objects would be good, so as to give the eye room to wander around in the picture. Compose the spaces so that no feeling of emptiness arises, which can weaken the impression.

To get the feel of this approach, put a single mazda or flood lamp on an extension

(1). To express the function of a locomotive, this closeup of the drive wheel was taken. (2). Low tide leaves the impression of countless waves on the wet beach. The sand pattern was photographed against the light. Rolleiflex camera, Panatomic film, f/11 at 1/25th second. (3) Spectacles on a mirror. Reflex Korelle, f/5.6, 1/25th second, yellow filter. (4) "Loneliness" is the mood of this solitary and empty bottle found on the beach. Rolleiflex, f/5.6, 1/50th second. (5). "Meat." f/4, 1/25th.



2



3

THE OBJECT

By ROLF TIETGENS—ILLUSTRATED BY THE AUTHOR

4



5



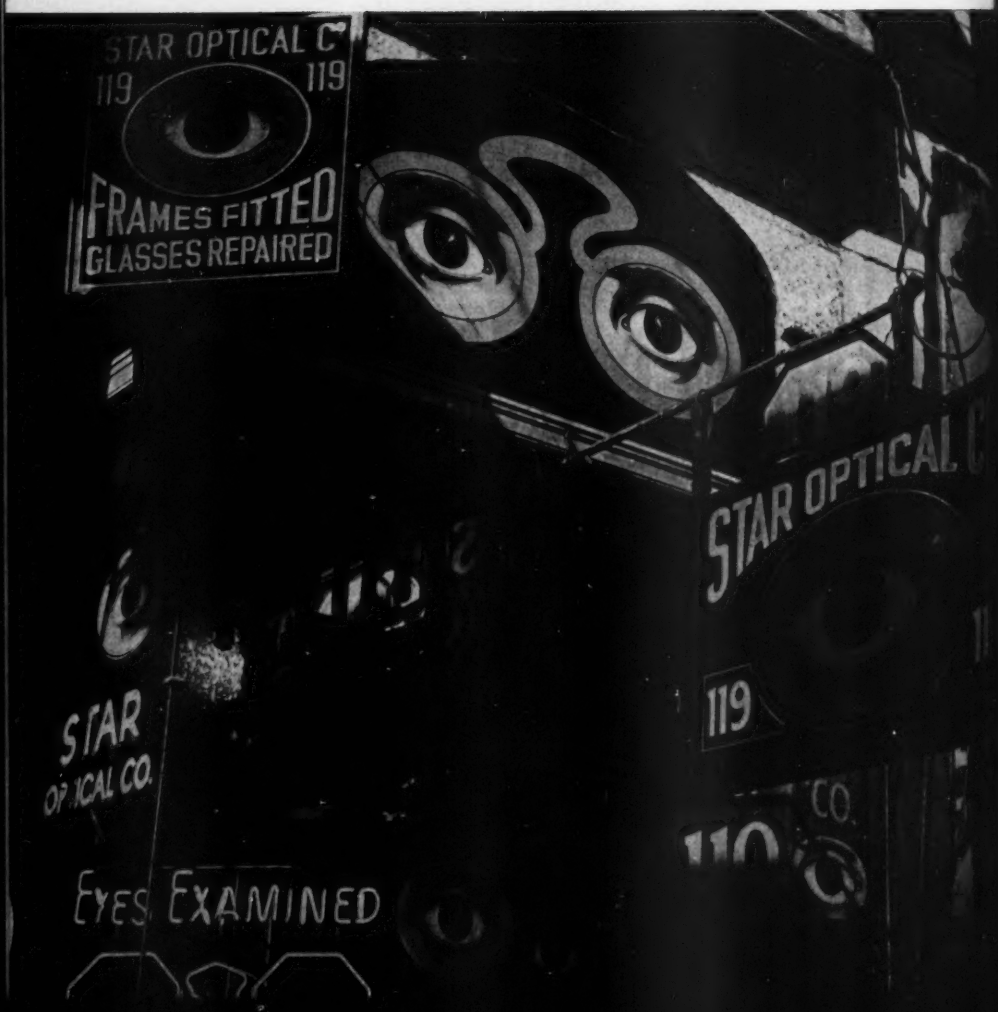


6



7

8



cor
this
the
cha
see
the
such
find

I
and
carr
win
aliv
ated
The
dow
only
the

I
und
nary
the
prob
spec
able
nois
fly t
togr

W
caus
life
dide
serv

(6). A
rolle
Expos
may
the co
Came
a refl
Yellow
horse



9



10

cord and walk through your home with this light. Put it in all kind of places: on the floor, halfway under the bed, under a chair, on a closet, behind a curtain and see what the objects in the room and also the members of your family look like in such unusual lighting. I'll bet you will find something that interests your camera.

It is the same outdoors. Take a walk and watch things, even if you are not carrying your camera. In a butcher's window, the head of a pig appears. It is alive. This impression, of course, is created through the light which falls on it. The picture was taken in the show window of a butcher, while the morning sun only struck the meat and the interior of the store remained in darkness.

In Fig. 3 we see spectacles on a mirror under a blue sky. To get rid of the ordinary effect of spectacles lying on a mirror, the print was turned upside down. The problem was to express the personal life of spectacles which seemed to be a creature able to move and perhaps even to make noises. They are alive and even able to fly through the air, as it seems in this photograph.

Why are many photographs dull? Because the author failed to comprehend the life of his subject, and because he himself didn't see it quite clearly. He didn't observe enough. Walk (Page 94, please)

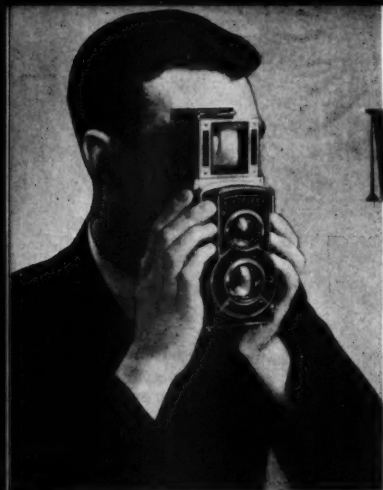
11



12



(4). A double exposure, taken with two mazda lamps, Rolleiflex camera, Panatomic X film, f5.6, 5 seconds. (7). Exposure f/11, 1/25th, yellow filter. (8). Even a street sign may have a life and meaning that can be captured by the camera. Panatomic, f5.6, 1/25th. (9). "The Headless Cameraman," not a trick shot, is a straight exposure of a reflection. Leica camera, f5.6, 1/50th second. (10). Yellow filter, Panatomic, f8, 1/50th. (11). Merry go-round horse comes to life, f4.5, 1/50th. (12). "On the Beach."



MY FAVORITE CAM-

'I' is for 'Ikoflex'

By BOB LEAVITT, A. R. P. S.
With Author's Illustrations

REMEMBER a couple of years ago when the Contax with its $f1.5$ was the speediest job built for turning night into noon?

And remember how, soon after that, the Super Ikonta B came homing to anxious arms just because it afforded the welcome larger negative, the automatic features popularized by the mighty miniatures, and the miracle of $f2.8$ perched up front?

And then again remember how Agfa and Eastman gunned their fast pans right over the mountain until Weston had to pull a new set of century digits out of the hat?

Meanwhile, throughout all this surge to speed, the poor twin-lens diehards stuck to their capably plodding $f3.5$'s and sat back with their fingernails gnawed down to the elbows because nobody would help them catch the express.

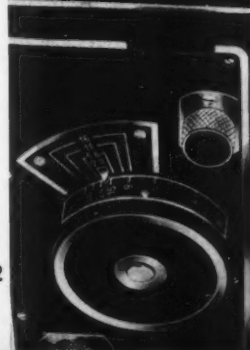
Now—to maintain the metaphor—it's a case of hold your hats, boys, for she's in the station and the signal's green. It's a nobby, natty new Ikoflex—the Ikoflex III; Zeiss Ikon, of course, by Dresden out of Jena, and its wearing that flashing Kohinoor, that anxiously-awaited, hopefully-anticipated $f2.8$ you've all been shouting for to put your picture making right up in the oh-boy bracket.

Ikoflex III has the same 8 cm. $f2.8$ lens that pedaled the Super Ikonta B to enduring fame. Like other twin-lens ma-

(1) "The film-advancing handle and the shutter wind work with all the sweetness of a maiden's sigh."

(2) "The focusing wheel is a handily-grabbed fistful and a quarter turn covers the full range from four feet to infinity. The depth-of-field scale is right on the wheel."

(3) Those split-second shots, where success depends on catching the right expression, come easy for the super-automatic Ikoflex.



ERA . . . AND WHY

chines, it produces a clutch of a dozen 6x6 cm. negatives to a roll of B2 or 120. The shutter is a concealed Rapid Compur stepping right up to 1/400. It has an $f/2.8$ finder lens and—as usual with the Iko-flexes — it embodies a condenser-type ground glass that's as brilliant as a sunburst right to its periphery. This cute little optical trick is a Zeiss Ikon nifty that makes you want to focus your camera out of sheer happiness, because your image is so easy to see. If all that isn't enough to blight your astigmatism, there's a neat 4-X hinged magnifier covering the entire negative area at one look.

To get down to details, parallax is, of course, compensated throughout the complete focusing range from four feet to infinity. In fact, this new Ikoflex gives parallax both barrels; there is a trickily devised parallax-frustrating Albada finder cleverly masquerading as the ground-glass finder hood. This Albada, since it is used largely for fast-action sports photography, covers a bit beyond the lens angle. The actual field is delineated by a stereoscopic

white marginal line on a neutral blue field. It is this line which gauges parallax correction automatically, by elevating or falling



as the camera is focused. These Albadas are invaluable for speed photography, and this is the first time Zeiss Ikon has attempted this superior finder on such a bold and impressive scale. It's good.

The focusing wheel is a handily-grabbed fistful. It works smoothly in a high-gear ratio that makes for fast focusing. A quarter turn covers the full range from four feet to infinity. The usual depth-of-field scale is indicated right on the wheel.

Being super-fully automatic, this new Ikoflex loads in most felicitous fashion. The film spools won't snag on the key slots and axle pins, for a simple twist of the film-winding handle jockeys them into position just as easily as saying it. Once the film is adhered to the take-up spool, it is advanced with the winding lever until an arrow on the paper leader of the film is adjacent to two white dots inside the camera at each side of the film-framing aperture. When the back is snapped into position, the film is advanced automatically to the number one position by four rapid flips of the winder. Number one pops up on the counter dial and the shutter has been cocked—both at the same time by this winding action.

But this is only part of all this automatic business. Bear with me. Simultaneously, a red signal has appeared in a slit near the winder, showing that film is in the camera. Another signal, not to be outdone, has popped up like a cuckoo-in-the-clock on the front of the camera to indicate that the shutter is wound and the picture not yet taken. When the self-timer has been set, this chameleon-in-the-front-coop switches by some strange Zeiss Ikon hocus-pocus to white. If it goes berserk and shows a rainbow, we don't know how to advise you except to say you're certainly not loaded with Kodachrome!

The film-advancing handle and the shutter wind work with all the sweetness of a maiden's sigh. So gentle. They are in close contiguity, and you can probably operate an Ikoflex III as fast as you can punch them out on a Contax or a Leica,

It happens this way: the thumb—not the forefinger—trips a down-riding shutter release. This action completed, the thumb now finds itself practically astride the winder arm, which it depresses with infinite ease. Both the shutter trip and the winder literally roll under your thumb. As easy as that. And, joy of joys, you don't have to fumble and juggle the camera out of position to do it.

This film-advancing handle sure operates slick as grease. And it requires such little effort. Just push it down until it stops after completing a half-circle. At the bottom of its arc it slides gently back by spring action. In addition to the finger trip for the shutter, there's a cable-release nipple built right into the hidden Compur, and this auxiliary method of tripping in no way deters the full automatic working of the coupled film-winding, shutter-setting mechanism.

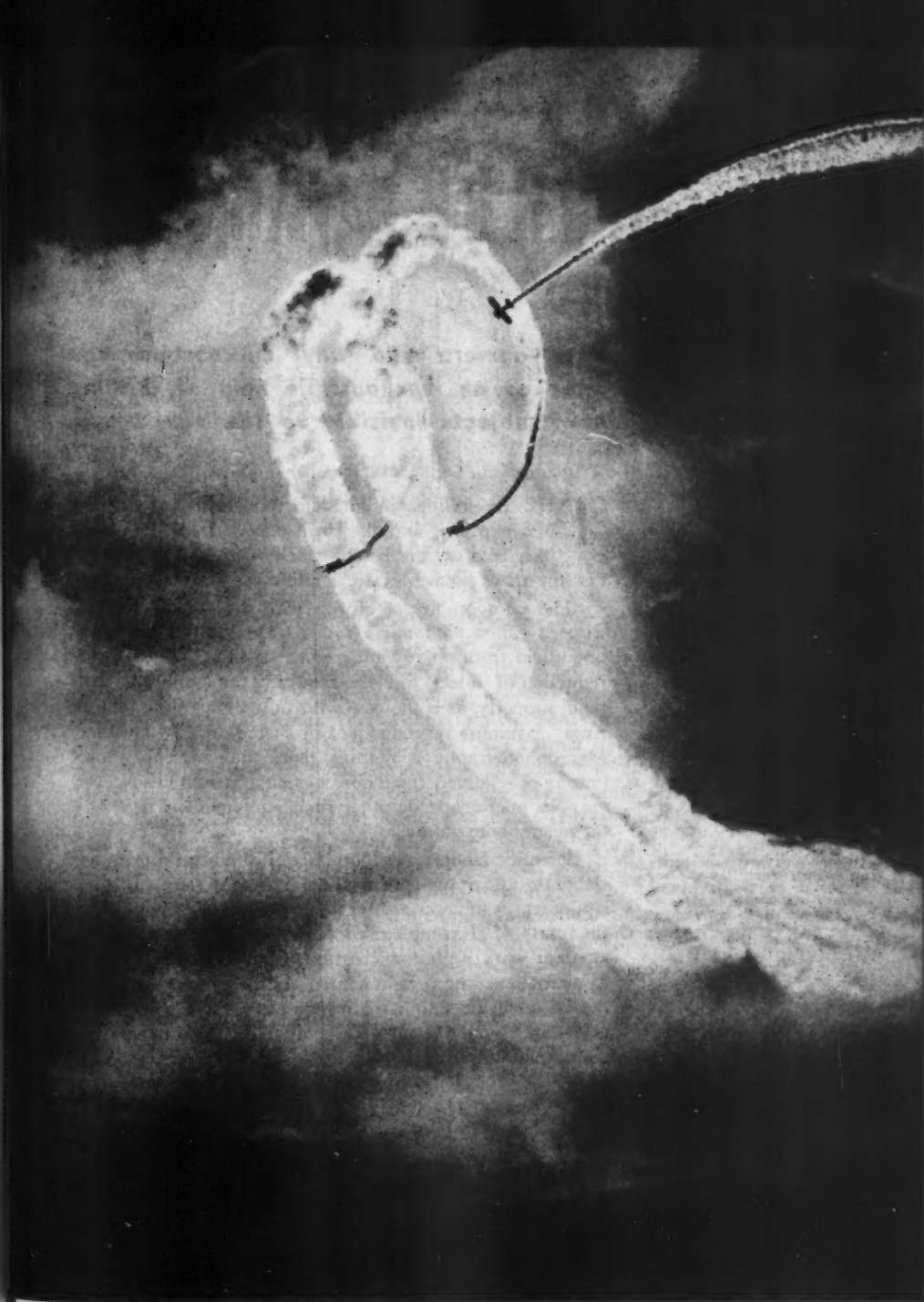
Another thing I like about this new Ikoflex is its heft. Because of its larger optical system—and $f2.8$ is 60% faster than $f3.5$,—the Ikoflex III is, perforce, slightly larger than the model II. But this size increase is not at all objectionable unless you're one of those fellows who judges a camera by whether he can thread a needle with it. More to the point, however, is the slight increase in weight, which is a very helpful adjunct in a waist-level box. It stays planted better and is less addicted to "bounce."

Finally, sartorially, Ikoflex III is sleek and opulent looking, with all the satin-chrome trim essential to refined elegance.

All in all, it's to the mustard that the twin-lens reflex cameras are starting to preen and bespeak themselves as Rolleiflex has done, and as Zeiss Ikon is now doing with its Ikoflex line. Competition will produce even greater advantages for photography and the photographer, though what they may be it behooves us to be too awed and dumbfounded to guess, for the end never seems to be in sight any more.

Nevertheless, mark it down as my num-

(Page 102, please)



A CAMERA capable of shooting at fairly rapid speeds is necessary for photographing airplanes. A single ship in the air generally results in too small an image when shot from the ground, as was this picture, but groups or formations of planes are another matter, especially when emitting smoke screens. Taken with a 4×9 Zeiss, Zeiss Tessar f4.5 lens, Agfa Superpan Press film, f11, $1/250$ th of a second, using yellow-green filter (Zeiss GR55). Film developed in Champlin 15. Print on Vitava Projection in glycine developer, Edwal 102. Title: "Aerial Penmanship," by Joseph E. Sherman.

The New

WORLD of PHOTO-



Your camera and any microscope can open up an inexhaustible field of thrilling new subjects invisible to the naked eye.

THE possibilities in amateur photomicrography are inexhaustible, and the thrill experienced in working in a field off the beaten track where the opportunities for new discoveries are endless cannot be described.

The photography of objects with the aid of a microscope is called *photomicrography*. This term is to be distinguished from *microphotography* which is applied to the reduction of objects to a size requiring a magnifier to view them properly, as is the case with tiny photographs seen in rings, or minute reproductions of such works as the Bible. Macrophotography is nothing more than closeup photography of relatively small objects such as match heads, eyes, etc. No microscope or other such equipment is necessary for macrophotography.

Scientific laboratories, hospitals, and industrial firms use elaborate apparatus costing thousands of dollars, but such equipment is unnecessary for amateur work. Fig. 9 indicates the parts of a complete professional unit. Modified for amateur work, a photomicrography unit includes a camera, a microscope, and a light source. As the camera lens need not be used, the simplest camera—even a dollar box camera—can be made to turn out creditable photomicrographs.

Professional type microscopes cost from \$75 up, but second-hand instruments in excellent condition can be had for as little as \$5 or \$10. There are special "home" models, such as B. & L. Model R, which cost about \$20. These can be bought secondhand for very little.

Buy a microscope of a recognized make. In a microscope the lens must be good, for if the optics are not satisfactory, good pictures are impossible. In the lower price range, good domestic models are manufactured by firms such as Bausch & Lomb and Wollensak.

In amateur photomicrography, the low powers are used almost exclusively, so there is little or no need for high magnifications. *Resolving power* or the ability of the instru-

(1) Examining specimens before photographing them. They should be clearly defined and without air bubbles or dust under the cover glass.

(2) (Left, next page). Section of muscle showing invasion by larvae of *Trichina spiralis*, a parasite transferable to humans from pigs magnified 260 times. (Right) Clumping of the silver granules in an orthochromatic film developed in D&A. Magnification, 500 times. Both pictures made with Leitz photo-micrographic equipment, Wratten M plates. By Miriam Barrett.

MICROGRAPHY

by
KARL A. BARLEBEN,
F. R. P. S.

ment to show detail, rather than magnification, is the thing to look for. A microscope having a top magnification range of 200 or 250 times is more than ample for most work.

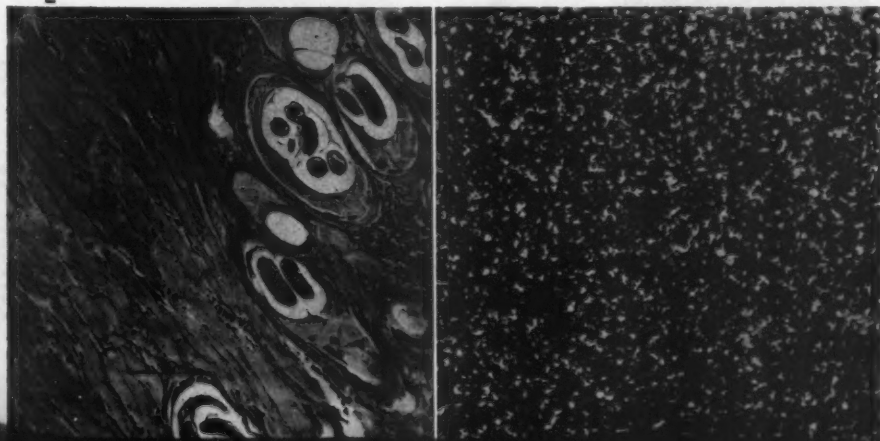
Professional equipment is operated in a horizontal position, but a less expensive vertical stand is suitable for amateur purposes. A means of supporting the camera above the microscope must be made or purchased. The simplest and least expensive arrangement consists of a wooden platform and upright, as shown in Fig. 3. This must be made to fit the camera and microscope, so no specific dimensions can be given. Directions for making a copying stand which can also be used for photomicrography were given in November MINICAM, page 154. The prime requisite for the stand is rigidity, for the slightest tremor or movement of camera or microscope will be amplified by the microscope's objective and transmitted onto the negative in the form of badly blurred images.

Two methods of joining camera and microscope are commonly used. If the

camera lens is removable, the camera is placed over the microscope without its lens. The ground glass or focal plane of the camera, without lens, should be at least ten inches from the eye-piece of the microscope. A ground glass is mandatory unless the camera lens is used on the camera.

A camera in which the lens is not removable is placed so that the lens is immediately over the eye-piece of the microscope. It is set at infinity. The back on most cameras can be opened and a piece of ground film or glass placed over the aperture where the film usually is situated. Even box cameras permit this. The difficulty with roll film cameras lies in the fact that the film cannot be loaded into the camera until after focusing has been done. This is a bit awkward but no great hardship.

The actual joint between the camera and microscope must be light-tight. For experimental purposes this can be taken care of by wrapping several folds of heavy black cloth or tape around the point where camera and microscope meet. A



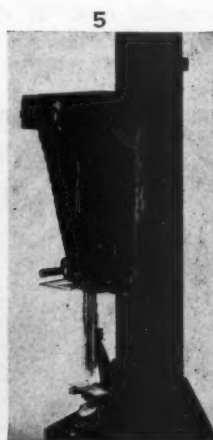
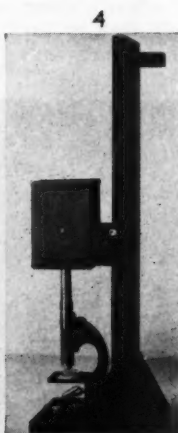
more permanent arrangement consists of a wooden box fastened to the camera and the draw-tube of the microscope, with cardboard tubes or sleeves which fit into one another to form the connection, or of cardboard tubes lined with felt. The type of joining depends entirely upon the equipment used.

Lighting can be supplied by an ordinary desk lamp, or by any one of the special microscope illuminators which range from simple, inexpensive units to intense, carbon-arc lamps designed for professional work. For hobby purposes, a simple lamp, using an ordinary Mazda house bulb of 60-watt intensity, will serve. If you wish to build a substantial lamphouse, provide for a 100-watt clear or frosted bulb, adequate ventilation, and a two-inch, circular front opening. This opening should have a holder in front of it into which one or more sheets of ground-glass or opal-glass can be mounted for light diffusion. In front of the diffusion holder should be several similar holders for filters. Two-inch square diffusers and filters are most satisfactory. The need for a water-cell (used to cool the illumination) depends upon the intensity of the light source and the time it must burn for exposures. It is usually placed close to the lamp condenser. Its sides should be flat and the water clear and free of bubbles. A flat-

sided bottle filled with distilled water or a cell made of sheets of negative glass made water-tight with pieces of inner tube rubber cemented to the glass can be used.

Unless you know how to prepare microscope slides for use, do your experimenting with prepared specimens which can be obtained from a biological supply house in your city at a small cost. These usually come mounted on glass slides and protected by a small round or square glass called a *cover glass*. For photographic purposes there should be no dust or air bubbles under the cover glass, since these will show in the final photograph. Beginners will get a great deal of fun out of photographing cross sections of skin, leaves, stems and roots of plants, and parts of insects.

When the photomicrography unit is assembled, master the mechanical features before attempting to make a picture. Examine your microscope. The support consists of a somewhat horseshoe-shaped metal base with a vertical metal support on one side. To this are attached in ascending order a concave mirror (in the case of more expensive models a substage condenser is used instead of the mirror to concentrate light and determine the size of the cone of light entering the objective), and a flat metal rectangle with a hole in the center and two clamps on



(3) Front view of an adjustable, home-made, wooden stand suitable for photomicrography.

(4) A box camera mounted over a microscope on the wooden stand.

(5) A 3 1/4 x 4 1/4 folding film-pack camera set up for a photomicrograph. The camera is held by a screw run through the wooden support and threaded to fit the tripod socket. Photographs from Bausch and Lomb Optical Company.

either side which is known as the *stage*. Immediately beneath this is a diaphragm known as the *substage diaphragm* which acts like an ordinary camera lens diaphragm. It cuts down the light, increasing the depth of focus when "stopped down" and increases the light while cutting the depth of focus when opened wide. Ordinarily this is left about $2/3$ open.

Above the stage is a tube known as the draw tube attached to the lower end of which is an *objective*. In more expensive models two or more objectives are mounted on a disk which can be swung around so that each objective in turn will move into place under the tube. Objectives giving different magnifications are mounted in this fashion for ease and speed in changing from one magnification to another. These objectives are the lenses which form the magnified image of the object being photographed or studied. It is the objective which determines the *resolving power* or the amount of detail which can be seen. The better the objective, the clearer the detail.

At the other end of the tube is an *eyepiece*. This magnifies the image made by the objective. Eyepieces vary in magnification. Many microscopes are equipped with 5x or 10x eyepieces while higher powers are available. Eyepieces of greater magnification can be used to compensate

for the lack of bellows draw on a camera.

On the vertical support of most microscopes you will find two thumbscrews, a large one and a small one. The larger is used for major adjustments and the smaller one for fine adjustments after the specimen has been brought into view.

Examine these parts of your microscope. Then light the light you are using for illumination and focus it on the mirror or the substage condenser, put the mounted specimen you are planning to photograph on the *stage*, catching it under the clamp and being certain to get it over the hole so that it is properly illuminated. Use a low-power objective and eyepiece. Look into the eyepiece, keeping one eye close to it.

The circle you see is called the *field*. The specimen you are working with should appear in this circle. To bring it into focus wrack the drawtube of the microscope slowly up and down by means of the *large* thumbscrew until the object comes into focus. The small thumbscrew is used to bring it into sharp focus. When

(6) The ground-glass of a Graflex makes focusing easy. Note the desk lamp used for illumination.

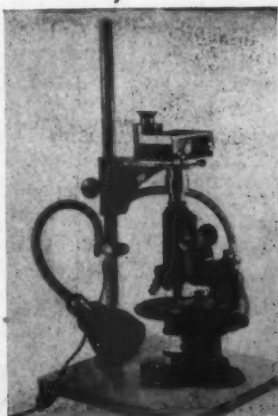
(7) This special apparatus for an Argus camera provides for ground-glass focusing without the need of opening the back of the camera. Photo from International Research Corp.

(8) A sturdy metal stand supports the plate camera in this photomicrographic setup for advanced amateur or professional work.

6

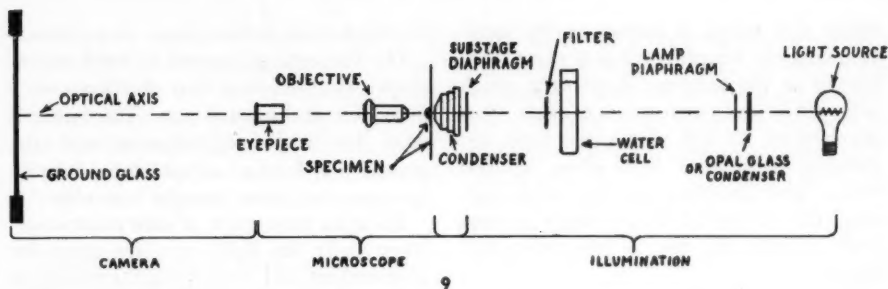


7



8





9

this is accomplished fix the camera to the microscope, check the focus on the ground glass and make the picture. The microscope can be focused while the camera is attached by using the ground glass and focusing with the thumbscrews.

Filters play an important part in photomicrography. The Wratten filters used are the A, B, C-5, D, E, F, G, and H. The B filter is used more frequently than the others. Filters are important in photomicrography because they cut through or cut out one or more colors in stained specimens and permit the image to be recorded upon the photographic emulsion in the manner desired by the photomicroscopist. Filters are placed between the watercell and the microscope in the beam of light simply because that is the most convenient place. Focusing should be done after the filter is in position.

The emulsion, whether it is a film or a glass plate, must be maintained at precise right-angles to the optical axis of the set-up, and must be in correct relation to the ground-glass focusing screen, otherwise the image will not be sharp.

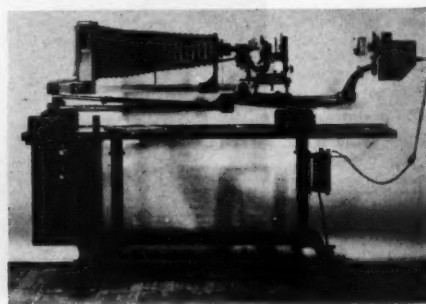
When the image produced by the micro-

scope is focused upon the ground-glass of a camera located ten inches from the eyepiece and from which the lens has been removed, it will have the same magnification as though you were examining the specimen through the microscope. If the ground glass or film is five inches from the eyepiece, the negative image magnification will be fifty percent of that given by the microscope. With the ground-glass more than ten inches from the eyepiece, the magnification increases proportionately.

Special plates designed for photomicrography are available. The Wratten M plate is the most popular of these. Its emulsion is slow and contrasty. Eastman Process Panchromatic plates or cut film can also be used.

The majority of amateurs will be equipped with cameras using roll film and 35mm. film. For them, fine-grain panchromatic emulsions such as Agfa, Finopan, DuPont, Micropan, and Eastman Panatomic-X are suggested. This work calls almost exclusively for panchromatic emulsions, since much red stain is used in preparing slides.

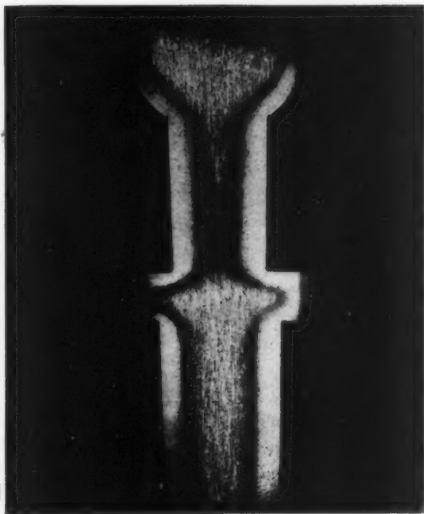
Probably the greatest hurdle in photomicrography is exposure. Lighting varies with every new set-up and specimen photographed. Various methods and gadgets have been devised for measuring exposure, but the peculiarities of photomicrography do not lend themselves to generali-



(9) Diagram of a professional photomicrographer's equipment.

(10) An 8x10 plate camera with double-extension bellows is used on this professional horizontal equipment. Photos from B. & L. Co.

10



zations nor specific methods. *Making test exposures* is the only reliable method of determining aperture or shutter speed. Photomicrographs must be carefully focused and accurately exposed, for they are accurate records and cannot be dodged, retouched or controlled.

When making prints use glossy paper and ferrotype them. Because of the great graphs, prints must be properly exposed. Those that are even slightly underexposed will lack important detail while those that are over-exposed will not show the slight

differentiations in parts which are necessary for a successful photomicrograph.

Do not make enlargements excessive in size or you will lose too much detail. Mount them. Masking prints with cardboard masks cut out to fit the enlarged microscopic field will do wonders in improving their appearance.

Natural color photomicrographs are made with Kodachrome, Bi-Packs, or three color separation negatives. The staining of specimens is done to bring out detail only, so that perfect color is not necessary as long as there is good differentiation between colors. Prints can be made with any one of the color printing processes now on the market.

There are a number of good books on photomicrography which the beginner or the advanced worker will find helpful. Among them are:

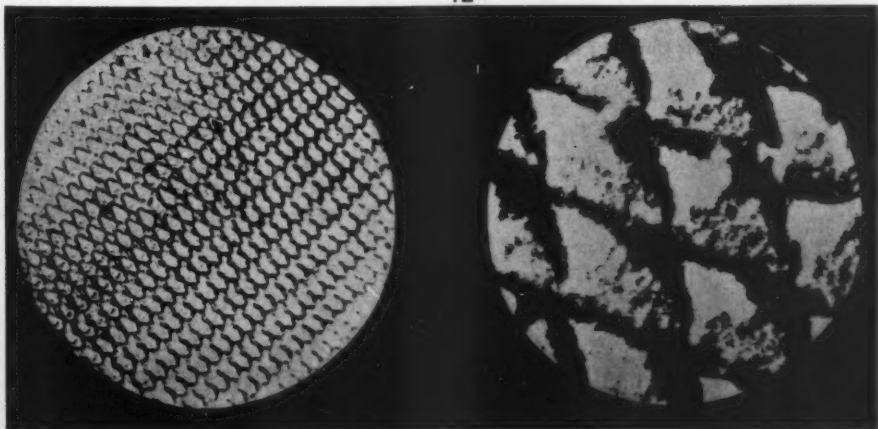
Barnard, J. E. and Welch, F. V.: *Practical Photomicrography*.

Gage, H. S.: *The Microscope*, 1936, N. Y., Comstock Publishing Co.

Hind, H. Lloyd, and Randles, W. B.: *Handbook of Photomicrography*, 1927, N. Y., E. P. Dutton and Company.

(11) Longitudinal section of a case-hardened bolt. An example of industry's use of low power metalurgical photomicrography.

(12) Photomicroscopy reveals the shortcomings of man's work when compared with that of Nature. Compare the size and regularity of the tongue of a snail (left) with which it files off its nutrition from plants, with the finest nail file produced (right) when both are viewed under the same magnification.) Photo C. Anders.



C A M E R A

Make three-color separation negatives with a modern, one-shot camera

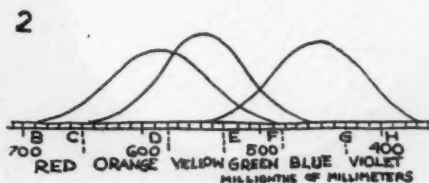
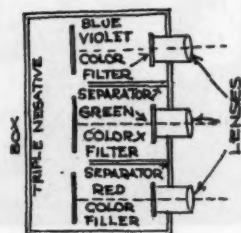
by
A. FREDERICK COLLINS, F.R.S.A.

SINCE that morning when Louis Daguerre found a visible image on a silver plate in his workroom men have been able to make permanent records in black and white of things they saw. Great as this achievement was, they were not satisfied—most objects were colored and the photographic process was unable to record these colors. The desire for completely realistic pictures led men over devious paths in an effort to find a means of making them. Today, after a century of experiment, color is a commercial reality. We can record accurately not only the size and shape of an object but also its color.

The first three-color picture. England in 1861 saw the first color picture—the object of half a hundred men's search over several decades. James Clerk-Maxwell took three photographs of an object with an ordinary plate camera. The first he exposed through a red solution, the second through a green solution, and the third through a blue solution.

From the three negatives, he made three positive lantern slides and projected each one on the screen so that they were superimposed on each other. The slides had no color in them but they were records of color, just as a phonograph record has no sound but is a record of sound. To give them their red, green, and blue colors, he placed the red, green, and blue solutions he had used to make the original negatives between the respective slides and the projecting lens of the lantern. The images of the object he had photographed were then thrown on the screen and the resultant picture appeared in natural colors.

The Ives Tricolor Camera. The first practical tricolor camera and lantern was invented in 1890 by Frederick E. Ives, of Philadelphia. It had three lenses. Fitted to the rear end of the barrel of the first lens was a red filter,



A S

(1) Diagram of the Ives camera, the first practical three-color, single-shot camera (previous page). A red filter is placed in front of one lens, a green filter in front of another, and a blue-violet in front of the third. Three exposures are made simultaneously. The picture is later projected onto a screen in full color by placing colored filters in front of each negative.

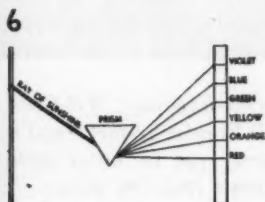
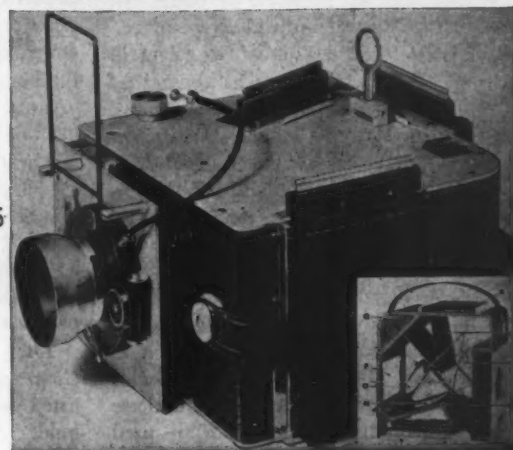
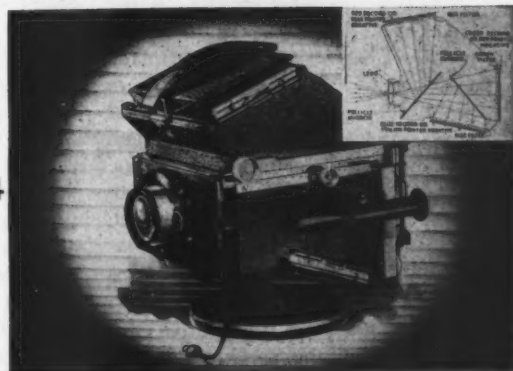
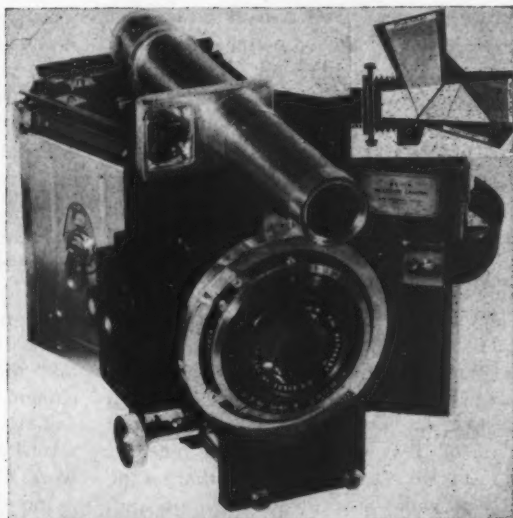
(2) Abney's color sensation curves showing how the overlapping primary color wave lengths set up the other colors of the spectrum.

(3) The Devin Tri-color Camera. The pellicle mirrors (see the diagram in the upper right hand corner), made of a thin membrane cast on a flat metal frame, prevent the bending of light rays common to ordinary mirrors, thus eliminating registration problems.

(4) The Lerochrome Tri color Camera.

(5) The Curtis Color Scout. The diafon mirrors (O on the diagram) have the highest reflection ratio yet devised for a color camera. This camera is also balanced to make the use of film packs practical.

(6) A ray of light broken up by a prism into the colors of the spectrum.



to the second a green filter, and to the third a blue-violet filter. Ives found that a blue-violet filter gave better color value than an ordinary blue one. These filters were simply small sheets of colored glass.

Behind each of these color filters was a dry plate, or rather a single dry plate divided into three equal parts. A top view of the camera is shown in Fig. 1. To make the exposure, the shutter was constructed so that it opened all of the lenses at the same time.

After the exposure was made, the dry plate was developed and fixed. The resultant negative was in black and white just like an ordinary one. The image on the first one, however, was a color record of all of the red rays that were reflected from the object photographed, that on the second of all the green rays from it, and, lastly, that on the third one of all the blue-violet rays.

A positive lantern slide was then made from the negative, and the images were thrown on the screen by a lantern that had three lenses which were so arranged that they could all be focused on one large screen. A single beam of light from an electric arc lamp or an oxyhydrogen jet provided the light and the beam was split up into three smaller ones by means of plane glass prisms and mirrors.

These beams passed through three condensing lenses and the triplicate lantern slide that was set in front of them. In front of the color record slide were placed the red, green and blue-violet filters in the same relative positions as those that were used in the camera when the picture was taken. When the lantern slide images were projected on the screen, the three colors were blended together, and the enlarged picture stood out in the natural colors of the object that had been photographed.

Modern color methods. The color processes in use today are of two types, those in which tri-color plates or films such as Kodachrome, Dufaycolor, and Agfacolor are used in an ordinary camera; and those in which ordinary plates or film are used

in a tri-color camera. A third process which can be used for still-life photography but which is not suitable for most other types of work is the making of three successive shots on ordinary film using the necessary filters. An improvement on this is the sliding or repeating back which can be fitted to some plate-back cameras, making this method easier.

A far cry from the early cameras are the single-lens, three-shot color cameras manufactured today. Outstanding among these modern precision instruments are the Curtis Color-Scout, the Lerochrome, and the Devin One-Exposure, Tri-color camera.

The first one-shot, tri-color cameras were designed for tri-color printing press work. Today, however, they are made in a more compact form and at a considerably reduced price for the amateur.

The optical system of a one-shot, tri-color camera of any make consists of a single lens and mirrors. The light reflected by the subject is reflected by the mirrors inside the camera onto three negatives or plates. Red, green, and blue-violet color filters are placed in front of their respective plates, and all of them are exposed at the same time. When photoflash lights are used the exposure can be made in $1/50$ of a second, or less.

The Curtis Color Scout. The chassis of this all-metal camera, Fig. 5, is of a single piece of aluminum, enclosed by reinforced aluminum side panels. The diafon mirrors, which were developed by Dr. Curtis, have the highest reflection ratio and, hence, the greatest light transmission that has yet been devised.

The Bausch and Lomb $f6.3$ Tessar, and the Goerz $f4.5$ are recommended for use on this camera. The Kalart type of coupled rangefinder can be used with an adjustable viewfinder. The camera is also balanced to make the use of film packs practical.

The Devin One-Exposure, Tri-Color Camera, Fig. 3, is likewise all-metal and is fitted with a new type of metal plate holder, which presses (Page 98, please)



THE ADVENT of minicam color cameras in the $2\frac{1}{4} \times 3\frac{1}{4}$ inch size makes the modern one-shot color camera as portable as a snapshotter's box for outdoor color pictures. The above is from a monochrome bromide print by Eleanor Parka Curtis, A. R. P. S. Title: "Colombian Idyll," from the Des Moines International Photographic Salon.

HOME LIGHTING

Simplified

One flood or flash lamp furnishes the main light source for various portrait and full figure compositions

By NOWELL WARD

Illustrations by the Author

ONE main light, correctly used, can give effective modeling whether it is the illumination of a five thousand watt "spot" or a match. Success depends on how the light is used.

Practice in the beginning with a single

figure or object. Use one secondary light if the subject is close to the background. In this case the single light often casts a bad shadow. To kill this shadow, use an "edge" or back light. Since this second light is always hidden

behind the subject and is used only to erase the dark shadow on the background, you are still, theoretically, using one main light source. This back light, usually a small photoflood, may be used either with or without a reflector. Correct placing of this edge light is most important, as it governs the tone of the background.

The nearer the light is to a white or light tinted background, the lighter the background will appear in the finished picture; the closer it is to the model and the farther from the wall, the darker the background will be in the photograph. This back light is always hidden be-

A SINGLE MATCH supplied the illumination for this picture. At $f/4.5$, the shutter was allowed to remain open while the match burned.

Fig. 1.



THE
point
trunk

hind
that
ance
close



THE TOMB. One boom (overhead) light was used. A background of beaver board painted with gray poster paint and a trunk covered with black paper were the only accessories needed. The model was posed on the trunk about four feet in front of the background and a single photoflood used.

Fig. 2.

hind the model and centered evenly, so that the illumination will be properly balanced on both sides of the picture. The closer this light is to the floor, the darker

the print will be at the top.

Experiment with the front light in order to understand the effects of different positions of this light. Place the camera



HANDS. Front lighting was used but without the edge light (see lighting diagram below). To get the dark background the model wore a black dress and the book was laid on a black cloth. Fig. 3.

about five feet in front of the subject with a small sized photoflood bulb in a reflector (see diagram below), as close to the lens as possible. Exposure on Portrait Pan film should be about 1/5th second at f11. Notice the excellent modeling and the lack of shadows in these pictures.

Experiment by moving the light about a foot or so to the right or left along the

imaginary arc as shown in Fig. 7. Imagine the subject as the hub of a wheel and the rim of that wheel as the arc in which the light is to be moved. The farther to the left or right this front light is moved, the deeper will be the shadows on the opposite side of the model's face and figure. As the light is moved, raise or lower it until the best possible effect is obtained.

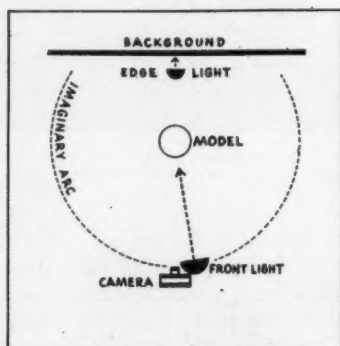


DIAGRAM showing the position of the background, model, edge light, camera, and single front light used for the two photographs reproduced on this page. Fig. 4.

PRESTIDIGITATOR (right). The edge light lightens the background while the front light gives good general illumination. Fig. 5.



BOBBY
used
ground
was m
from
camer
low).
Fig.
shadow
the pi
moved
away
shadow
site b

LIGHT
Fig. 6.
versed
making
the lig
right c

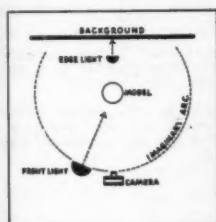


A
Boom
of the
face a
consist
ing at
It is c
someo
over
Tomb
back l
tion ca
a sma
model.
tilted
on the

In a
No. 1 f

BOBBY. An edge light was used to illuminate the background and the front light was moved a few feet away from its position next to the camera (see diagram below). Compare this with Fig. 5. Note the heavier shadows on the left side of the picture. As the light is moved along the arc farther away from the camera, the shadows on the side opposite become heavier. Fig. 6.

LIGHTING DIAGRAM for Fig. 6. The picture was reversed in reproduction thus making it appear as though the light should be on the right of the camera. Fig. 7.



A single "spot" light, known as a Boom light, placed directly over the head of the model and shining down onto her face and hair, is effective. The Boom light consists of a standard with an arm extending at right angles which holds the light. It is easy to substitute for it by asking someone to hold an ordinary lighting unit over the head of the subject. "The Tomb," Fig. 2, was made in this way. No back light was employed. The illumination came from a 500-watt photoflood in a small reflector held high above the model. At the same time the Boom was tilted slightly so that part of its light fell on the background.

In any of the setups described above a No. 1 flash bulb may be substituted for the

front lighting unit with good results. Flash lighting is especially efficient in photographing young children. Keep the edge light burning during the flash in order to subdue the hard shadows characteristic of flash photography. When using flash bulbs with Portrait Pan film stop down to $f/11$ for dark subjects and to $f/16$ for lighter subjects.

In experimenting with a match as the single light unit, use the kitchen variety because the light-life of these matches is longer than that of the paper kind. Use a floodlight to focus, turn it off, ask the model to strike a match, open the shutter, and close it when the match burns down. Fig. 1 was made in this way with a lens opening of $f/4.5$.

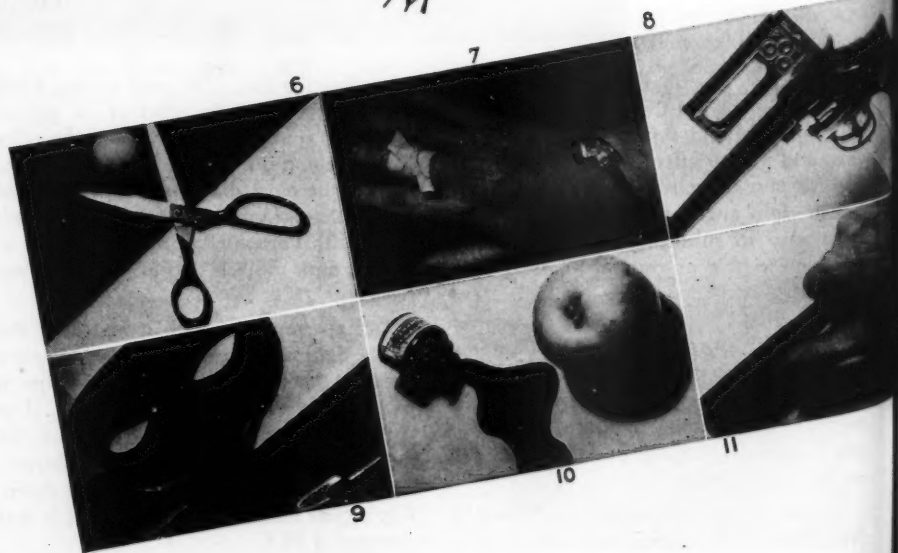
PLAY

photo-

9



- (1) Simple props produce effective pictures. These sketches illustrate ideas which can be worked out as photographic dilly dallies. A man's hand, a dish, and some soup produces "in the soup."
- (2) A double dilly—a pistol aimed at a watch can be either "Shoot the works" or "Killing time."
- (3) Two traffic tickets spell "Double trouble."
- (4) A bug printed in three successive positions close together is a good dilly dally for "Jitterbug."
- (5) Symbolic of dilly dallies in their early stages was the "Indian in a Ford V-8 with the windshield wiper running."



graphic "DILLY - DALLY"

DO you remember your mingled surprise and concentration when a friend confronted you with one hand held behind his head, fingers pointing upward, the index finger of the other hand wagging madly before his eyes, chirping, "What's this?" Of course you didn't know, so he was tickled all over to inform you that he was, "An Indian in a Ford V-8 with the windshield wiper running." It was a great game and everyone had a lot of fun.

More enjoyment and a good bit of benefit can be derived from a photographic, up-to-date, version of the same game. Instead of cavorting over the countryside wiggling fingers, making faces, and generally pulling oneself out of shape, let photographs do the work. Make up dilly dallies, photograph them, and greet your friends with a picture and the challenge, "What's that?"

There isn't any limit to the number and variety of subjects that lend themselves to this treatment. Some of the illustrations were inspired by an insurance company's list of available policies. A few other ideas were sketched rather than photographed, so that you can use them for your first photographs to get the hang of the thing.

Play Photo Dilly. It's a chance for originality, humor, and photographic excellence all rolled into one. Work out a set of rules to inject the spirit of contest into the game. For instance, if you challenge friend Joe with a Photo Dilly and he names it, he should get your print. That would get the old ones out of circulation. Then try his.

The camera club could call for contributions of Photo Dillies from members, post them on the display board, and run a contest. Furnish contest blanks and award prizes in photographic goods for the best answers. Or give a party with an admission price of one Photo Dilly, work out your own rules for numbering the prints and displaying them while your guests write their guesses opposite the corresponding numbers on a piece of paper. It might make it more fun if the Dillies were limited to certain subjects such as proverbs, insurance policies, wearing apparel, etc. The possibilities are limitless.

By VICTOR WASSON

- (6) Scissors and a ball on a background of black and white paper picture the expression "A cut on the ball."
- (7) Types of insurance suggest a number of dilly dallies. This one represents public liability and property damage.
- (8) Given a carpenter's square and a pistol the photographer can make a picture of "Squashooter."
- (9) A mask for the robber and a match for the fire equals fire and theft insurance.
- (10) Almost anything can be used to make dilly dallies. A bottle of ink spilled on white paper and an apple represent accident and health insurance.
- (11) "The Chiseler." Tools such as bore, chisel, awl, and square are especially descriptive objects for dilly dallies.

D A N C E R S

before the lens

The Technique of Dance Photography As Revolutionized in Will Stone's Pictures of Ballet, Acrobatic, Classic, and Modern Dancers

By ARTHUR BROWNING

Illustrations by Will Stone

MOST unique about dance-photographer Will Stone is his insistence on doing all the work himself. He makes up the models, poses them, arranges the lights, makes the exposures, develops the negatives, and prepares the finished prints. A nonconformist realizing the need for a revolution in this field, Stone entered dance photography six years ago. The chief fault with dance photographs was a static quality in the posing and treatment. For Mr. Stone the perfect photograph of the dance conveys a feeling of rhythm and grace, a sense of motion, a breath of life. It never gives the appearance of having been specially posed for the camera; rather, it is spontaneous action arrested and captured by the lens before the dance is continued.

Each type of dance and each phase of the dance is governed by a different photographic technique. Ballet, acrobatic, classic, and the modern dance—each must be photographed to convey its particular mood.

Fig. 5 is a study of Ballerina Tamara Toumanova which conveys the spirit of her dance. The first step in making this or any dance picture is the application of the model's make-up. Mr. Stone does this himself, because, as he says, "Many photographers make the mistake of allowing their models to use their own brands of make-

(1) Floodlights are substituted for spotlights when unposed action pictures are made. Jane Dudley, modern dancer, photographed in action.

(2) Strong back lighting and a high front spotlight make this pose effective.

(3) A character portrait of Little Egypt with unorthodox lighting to exaggerate the oriental mood.



2.





4



5



(4) A clever picture in which neither dancer is subordinate and yet the poses are authentic.

(5) Several coats of white-wash applied to a sheet of unbleached muslin stretched on a wooden frame make a good background for this picture of Ballerina Tamara Toumanova.

6



(6) Blanch Evans executing a modern dance jump. One 1500-watt floodlight and four 1000-watt spotlights were used.

(7) The shadow of a camera tripod makes a telling background for this shot of a ballet dancer preparing to pose for the photographer.

up and to apply it themselves. Make-up for the stage is heavy and exaggerated while make-up for photography must be smooth and suitable for panchromatic materials. To insure successful make-up, use Max Factor's panchromatic base No. 24 applied smoothly and evenly over the face, lips, and throat, a small amount of eyeshadow, a few strokes with an eyebrow pencil, and mascara. The No. 24 base is balanced with Agfa Triple S Pan film, producing a faithful color rendition and rich tonal gradations."

The only props used in Fig. 5 were a platform and a white background. The platform was 12 inches high of wood painted white. The background was 20 x 14 feet and consisted of unbleached muslin stretched on a wooden frame. Several coats of whitewash applied to the

muslin served to reduce its natural, light-absorbing qualities, and to present a more reflective surface. The dancer took her place on the platform which was set about 12 feet in front of the muslin. A 1000 watt bulb in a reflector which casts a wide beam was placed on the floor directly in front of the background. One spotlight, providing the chief illumination for the figure, was placed near the camera and about eight feet high. Another spot about six feet high was placed behind the dancer and pointed so that its beam intersected that of the first spot at about a 120 degree angle.

A third spotlight was concentrated and focused on the background behind the model's head. Mr. Stone believes that this method is more suitable than toplighting for dance photography because it serves



7

the purpose of separating the head from the background without producing a glistening effect on the hair which often detracts from the naturalness of the effect as a whole.

The spotlights, equipped with Fresnel lenses, utilize a 100 volt bulb operated on a 115 volt circuit which has the effect of increasing the power of each light approximately 100 per cent. Using the lights at full power and keeping them at a distance from the model makes the lighting even and strong without wilting the model.

When the lighting is arranged, Stone sets up his camera. For studio work he uses a 1910 Seneca View camera which he bought six years ago for \$15 and has used ever since. The camera is placed in a low position, varying from one to three feet from the floor. This is the most satisfactory position from which to photograph the dance in most cases. The low angle builds up the dancer giving her that graceful attitude which is of prime importance in a successful dance photograph. Too low or too high a camera angle, however, will cause distortion.

(8) Portuguese Folk Dancer. On festival nights Portuguese maidens dance before bonfires until dawn. A 100-watt spotlight used in the foreground simulated firelight while two 500-watt spots, one on each side of the dancer, completed the lighting for this photograph. Graflex, Triple S Pan film, f8, 1/25th.

(9) Lights were arranged to give this studio shot the appearance of actually being made backstage. A 1500-watt floodlight was placed on the floor to the right of the camera while a diffused, 1000-watt floodlight was placed high on the left side and a 500-watt flood was projected on the background.

(10) This dancer held the position in which the photographer found her for a two-second exposure backstage at the Metropolitan Opera House.

Each photograph must not only picture an authentic pose from one part of a specific dance, but it must also effectively illustrate the mood and tempo of the whole dance. To choose the pose, Mr. Stone watches the dancer through her routine, noting the poses that fulfill the requirements. He stops her and has her hold particular poses while he criticizes

and corrects the body lines. The position of the head, neck, arms, legs, hands, and feet must give an unrestrained appearance and at the same time must remain absolutely authentic and in keeping with the remainder of the dance.

When the preliminary work is completed, Mr. Stone is ready to make the exposure. His camera work is singularly free from fuss and flurry. It has been so completely systematized that there is no time wasted. He takes a reading with a Weston meter and gauges his diaphragm so that the speed is about $\frac{1}{2}$ second. With



8

the camera set and the release in his hand, Will Stone watches the model, suggesting minor adjustments in pose and expression, until he is satisfied with the appearance of the whole set. Then he exposes.

Often the spirit of the dance cannot be captured in a posed portrait or the model cannot hold a difficult or strenuous pose. Then only a picture taken during the actual performance will produce the desired result. On such occasions Mr. Stone uses a $\frac{3}{4} \times \frac{1}{4}$ Graflex fitted with an f2.5 Cooke lens. Dancer Jane Dudley found it impossible to assume a still pose

that could capture the intensity of expression and pose of the modern dance, so Will loaded his Graflex and asked her to dance, while he clicked away at 1/400th of a second at $f/2.8$ to make Fig. 1. This may sound easy, but there is much more involved in the making of good action photographs than tripping the shutter.

The spotlights used for posed pictures must be replaced by 1,000-watt floodlights while a 2,000-watt light is projected in the background. These lights are used at their fullest capacity, since a high meter reading is more important than good lighting arrangement, although a combination of the two is ideal.

When the lights are in place, the model must go through a complete dance routine while the photographer notes the effective and picturesque motions and their approximate timing. Sometimes the dancer must repeat the performance from six to ten times so that Mr. Stone can make changes in the dance itself before he is ready to go ahead. There are many things to watch. No position should be recorded

where the arms are hiding the face or casting a shadow on it. The face must retain a pleasant expression, for a strained or unnatural appearance detracts from the general effect, and the costume must drape well when in motion.

After these precautions have been taken, Mr. Stone focuses his camera on a predetermined spot usually in the center of the platform in a position where the light is best. The exposure is made when the dancer strikes the correct position on that precise spot. Caution in focusing is required because the depth of the field at $f/2.5$ or $f/2.8$ is limited to about 12 inches.

Fig. 3, for example, is a clever, subtle exaggeration and satirization of the exotic fascination of Little Egypt. He achieved this effect by means of entirely unorthodox facial lighting which heightens the illusion of oriental mysticism. He used one front light close to and on the side of the model; another spotlight was focused on the background and a small amount of light was allowed to "spill" over the face.





II "Swirling Skirts" by Ralph Haburton. Lighted by six reflectors arranged in a semi-circle. Graflex camera, Superpan Press film, 1/500th at f4.5.

The picturesque positions dancers assume inspired Will Stone to reproduce the backstage atmosphere in his studio where the lighting could be controlled. Fig. 9 is a carefully posed and cleverly planned

"candid" shot. Observe the odd, but comfortable position assumed by the ballerina while resting. The costume is carefully draped over the back of the chair while she rests her weight on the flat of her back

and
the
the
wat
the
A
piac
to b
a th
the
T
stag
the
togr
posi
ing



and flexes her legs by stretching them on the ladder. Lights were arranged to give the appearance of backstage. A 1,500-watt floodlight was placed on the floor to the right of the camera close to the model. A diffused, 1,000-watt floodlight was placed high on the left side. This served to bring out the detail in the shadows and a third 500-watt flood was projected on the board in the background.

There are times when a scene backstage is too tempting. Fig. 10 was made at the Metropolitan Opera House. The photographer came upon the ballerina in this position and asked her to hold it. Guessing at the focus and resting the camera on

a chair, he made a two-second exposure at $f/2.5$ on Superpan Press film.

Stone's darkroom technique is highly systematized. All film is developed in Agfa 17 for 12 minutes at 70 degrees. Prints for reproduction are made on glossy Brovira, which produces fine blacks and grays. Exhibition prints are made on Illustrator's Special paper. The prints are developed in a three-to-one, instead of the usual four-to-one solution of D72.

"In dance photography," says Will Stone, "remember that the picture must please the most critical audience of all—the dancer. The photograph must flatter his or her best characteristics."

Being CRITICAL

Your snapshots and how to improve them.
In mailing prints, address to above department.

PORTRAIT shows imagination and reasonable technical skill on the part of the photographer. However, there are a number of small details which, if they had been studied before the exposure was made, would have made this an outstanding picture. The lights, which were apparently placed equally distant on each side of the camera, give too balanced an effect, creating similar shadows on the background. One of the light sources should have been lowered in intensity or moved farther away from the subject while the primary light should have been heightened several feet above eye level.

The hand is posed so that it looks almost like a fist. In portraits of this type the fingers should always be extended and the hand photographed from an angle which will make it look narrow and graceful. It is slightly out of focus. This could have been corrected by stopping down the lens say from $f/2.8$ to $f/4.5$ and using a slower shutter speed to compensate. It is more practical to have the hand held nearer to the background and closer to the plane of the face. This not only brings it in focus, but makes the hand appear smaller.

The black line of the girl's coat cuts the flower at her neck in two. This could have been corrected by pulling the flower over the coat, which, of course, is a matter of common sense rather than of photographic knowledge. In portraiture it is very often obvious details which make or break a picture. The successful photographer is the one who concentrates on details, sees them in the ground glass or finder, and corrects them before they appear on the film. The background of this picture was apparently formed by placing a piece of cardboard against a dark wall. This is a smart idea and creates interesting lines. It is a good trick to



PORTRAIT. Perflex camera, Supersensitive Pan film, two photofloods six feet from the subject, $f/2.8$, $1/100$ th.

keep up your sleeve for those impromptu portraits which you must make now and again.

Since the photographer who took **ENGINEER** apparently went to the trouble of posing his model, he might have had him doing something. The two valves in the picture offer an interesting way to tie up the model with the setting by posing the engineer turning one of them. The valve on the left would be preferable, since the use of the other would concentrate the action too close to the center of the picture.

In taking industrial pictures, strive for pattern effects, or let the mechanical parts of the picture serve as a background for the workmen. Perhaps the greatest fault with this picture is that it does neither of these things. The man who was behind the camera might, per-

(Page 99, please)



ENGINEER. Argus C2, $f/3.5$, $1/25$ th.

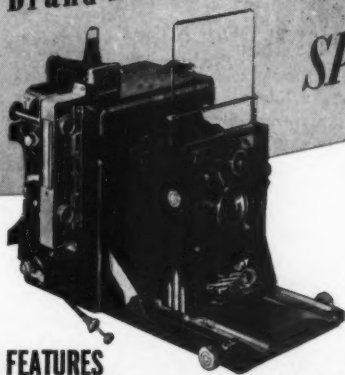


1890

Brand New Winners for A Brand New Year

3 1/4 x 4 1/4 and 4 x 5

SPEED GRAPHICS



1940



ADDED FEATURES FOR ADDED VERSATILITY

GREATER STRENGTH AND PRECISION

- ★ New all-metal drop bed, locking rigidly for wide angle shots
- ★ New one-piece metal front standard
- ★ New front standard locking lever
- ★ New positive track lock
- ★ New provision for simplified, protected internal coupling of accessory range finder

GREATER SMOOTHNESS and CONVENIENCE

- ★ New two-piece linked track for pinion focusing of wide angle lenses
- ★ New dual control helical rack-and-pinion focusing for right-hand and left-hand operation
- ★ New lateral and also vertical shift of lensboard
- ★ New wire frame view finder telescoping into front standard

BETTER APPEARANCE AND DURABILITY

- ★ New use of bright and satin chrome
- ★ New chrome protective band on body front

COMBINING new versatility, new convenience and new beauty of appearance with already recognized Speed Graphic dependability, these brand new models are better able than ever before to give you superior pictures anywhere, any time. Look at their many new features listed at the left! Providing a greatly extended range of usefulness, they make these improved "all-purpose" cameras potential prize-winners for any owner—the "waited-for" team-mates for the increasingly popular 2 1/4 x 3 1/4 Miniature Speed Graphic. See them at your Dealer's.

EASY PAYMENTS The new 3 1/4 x 4 1/4 and 4x5 Speed Graphics are priced from \$123.00; equipped with coupled range finder, from **\$25.00** \$150.50. Down payment as little as

LINK CONNECTED TRACK



TRACK LOCK AND DUAL FOCUSING CONTROLS



SLIDING FRONT



New York City Display Rooms: 80 Rockefeller Plaza

FREE CATALOG! Send today for free catalog of Graflex and Speed Graphic American-made, Prize-Winning Cameras and Accessories, and free folder on the new cameras described above. Paste coupon—or write your request—on penny postcard, if you wish. Folmer Graflex Corporation, Dept. MC-23, Rochester, N. Y., U. S. A.



FOLMER GRAFLEX CORPORATION
DEPT. MC-23, ROCHESTER, N. Y., U. S. A.

Please send me your catalog of Graflex and Speed Graphic American-made, Prize-Winning Cameras and Accessories and free folder on the new 3 1/4 x 4 1/4 and 4x5 Speed Graphics.

NAME _____
ADDRESS _____
CITY _____
STATE _____

GRAFLEX

American-made Prize-Winning Cameras

How To Copyright Your Photographs

Questions and Answers

By ALEXANDER SCHAMBAN

Q. Can a photograph be the subject of copyright protection?

A. Yes. By special provision in the Act of Congress, commonly known as the "Copyright Act," photographs of "artistic originality" are within the purview of the copyright laws.

Q. For what length of time can a picture be protected?

A. Twenty-eight years.

Q. Can the copyright be renewed?

A. Yes, for an additional period of twenty-eight years.

Q. Who can obtain a copyright of a picture?

A. Either the photographer or the sitter.

Q. Who has the superior right?

A. The photographer has, if the picture was taken at his own expense and gratuitously.

Q. Can the sitter copyright the photographer's finished picture?

A. Yes, if he or she paid the photographer for taking the picture or if the latter relinquishes his right to copyright it.

Q. Suppose a photograph is taken of a particular scene or object, and then is copyrighted; is it an infringement for another to take a photograph of the same subject matter?

A. No.

Q. Can a copyrighted picture be copied or duplicated without the owner's permission?

A. No.

Q. When must the picture be copyrighted?

A. Immediately after publication.

Q. What are the formal requisites?

A. The Act requires that one copy be filed with an application properly filled out. The original and copies of the picture must bear "copyright" or the letter C in a circle followed by the owner's name.

Q. What is the filing fee for copyrighting a picture?

A. One dollar. The fee is two dollars if the owner desires an official receipt indicating ownership of copyright.

Q. What is publication?

A. It is distribution or general public exhibition. It may also be the first day when the picture is offered for general sale.

Q. Must a picture be copyrighted in order that the owner be protected from unauthorized copying or use?

A. No. The photographer has the common law protection.

Q. What is that?

A. It is the right of the photographer or sitter, whoever is the owner, to have the exclusive ownership in the picture so long as it is not dedicated or published to the general public.

Q. Does exhibition of a picture act as a dedication to the general public?

A. No, unless permission is given for copying.

Q. How long does this common law right of protection exist?

A. Indefinitely or until such time that the picture is given out for general public exhibit or usage, or at the abandonment of the owner's apparent right to obtain a copyright.

Q. Does copyright in the United States protect the owner in England or Canada? Or other foreign countries?

A. No. U. S. Copyright protection extends to this country and territories only.

Q. Is it necessary, therefore, to obtain separate copyright protection for other countries?

A. Yes.

Q. Does copyright give the owner the right to restrict the sale or control the price of the picture?

A. No, unless the owner does so by contract with the person to whom he sells the picture or gives the right to act as his agent.

Q. Is it an infringement for the buyer or agent to dispose of the picture or copies at prices or terms different than originally specified?

A. No. It constitutes a breach of contract and only remedies applicable in such event can be obtained by the copyright owner.

Q. Suppose an infringement exists, what are the rights of the copyright owner?

A. The owner has a right to restrain the wrong-doer by injunction and sue for damages in addition.

Q. Can a copyright of a picture be transferred or assigned?

A. Yes.

Q. Can a photographer enter into an agreement to transfer the copyright of pictures to be taken in the future?

A. Yes, but it is unenforceable except in a suit for damages. The aggrieved purchaser has an equitable right in the pictures when taken

(Page 99, please)

Announcing the "PICTURE PACKARD" contest

Photograph America's Most Beautiful Car—and WIN IT!



Limitless Possibilities! Just picture any 1940 Packard . . . Any place . . . Any situation



Beach Scenes

Snow Scenes

Scenic Beauty

"Candid Shots"

229 Awards—including Five 1940 Packards and \$3,600 in Cash!

CONTEST STARTS JANUARY 15TH—COSTS NOTHING TO ENTER!

5 NEW 1940 PACKARDS AS NATIONAL PRIZES!

1st Prize—120 CONVERTIBLE COUPE

2nd Prize

120 TOURING SEDAN DELUXE

110 CLUB COUPE

3rd Prize

110 TOURING SEDAN

5th Prize

110 BUSINESS COUPE

ALSO 74 CASH PRIZES TOTALING \$3,600

6th Prize—\$500

8th Prize—\$200

7th Prize—\$300

9th Prize—\$100

10 PRIZES OF \$75 EACH

20 PRIZES OF \$25 EACH

15 PRIZES OF \$50 EACH

25 PRIZES OF \$20 EACH

150 AWARDS OF MERIT

50 SILVER MEDALLIONS

100 BRONZE MEDALLIONS

START TODAY! If you don't own a camera, borrow one! Remember, it's the picture that wins, not the equipment used. Originality . . . beauty . . . drama . . . appeal . . . qualities like these count as much as technical excellence.

But be sure to include a 1940 Packard in the pictures you "shoot"—whatever the situation!

See your Packard dealer or photographic store today for official rules and entry blank. Your Packard dealer will gladly give you a copy of "Winning Hints"—packed with picture ideas and professional suggestions. And study the 1940 Packards on display in his showroom for "camera angles".

Don't delay. The "Picture Packard" contest starts January 15th—closes March 15th. The sooner you start, the better your chance of winning a 1940 Packard!

**Enter today—SEE YOUR PACKARD
DEALER OR CAMERA SHOP**

K A M E R A -

Kwiz

TEST YOUR KNOWLEDGE OF PHOTOGRAPHY—THEN SEE ANSWERS AT END OF QUIZ

THESE questionnaires are designed to test your knowledge on a different phase of photography each month. They are more than a test of what you already know, since they bring out points with which you may not be familiar or which are puzzling, and answer them clearly. Follow this series from month to month and you will find that your knowledge of photographic fundamentals will increase rapidly.

This month we engage you in the engrossing enigmas encountered in enlarging. Score yourself one for each correct answer. Questions of more than one part are scored in fractions. Fifteen is a perfect score while anything below nine indicates more reading in MINICAM should be done.

1. If the chemists ever produce an absolutely grainless negative is there anything else that would prevent unlimited enlargements from tiny negatives?

2. We know a photographer who is always doing double printing. Does he (check one)—

- A. Double the printing time and shorten development?
- B. Print twice on the same sheet by mistake?
- C. Make one print from two or more negatives?
- D. Work from paper negatives.

3. Distortions can be produced by buckling the paper on the easel. This places different parts of the image at different distances from the lens. How can all parts of the picture be kept in focus? (check one)—



- A. Raise the condensers.
- B. Adjust the lamp.
- C. Stop down the lens.
- D. Expose twice, once for the high parts, once for the low.

4. Perhaps we can enlarge your enlarging vocabulary with some more word associations. Match a word in one column with its mate in the other.

carrier
field
trimmer
chloro
foot
blue

print
bromide
negative
toner
flat
switch

5. Why does this print which is O. K. in the center fall away at the edges?



- A. Enlarger was stopped down too far.
- B. Chemical fog.
- C. Negative too large for the lens used.
- D. Negative buckled in carrier.

6. If you make a 16x20 enlargement from a negative measuring 1x1 1/4", how many diameters would the enlargement be?

- A. 20
- B. 2 1/4
- C. 16
- D. 320

What would the percentage of linear enlargement be?

- E. 160%
- F. 20%
- G. 200%
- H. 1600%

What would the increase in area be?

- I. 16 times
- J. 25 1/2 times
- K. 20 times
- L. 200 times

7. If a camera lens is used in a condenser enlarger, be careful to prevent:

- A. Burning of diaphragm vanes.
- B. Warping of lens elements.
- C. Melting or discoloring of the cement in the elements.
- D. Formation of bubbles in the glass.

8. Focus is established in enlargements by the relationship of—

- A. Lamp to film to lens.
- B. Condenser to lens to paper.
- C. Lamp to film to paper.
- D. Film to lens to paper.

(Page 93, please)

Wollensak

MEANS GOOD LENSES . . .

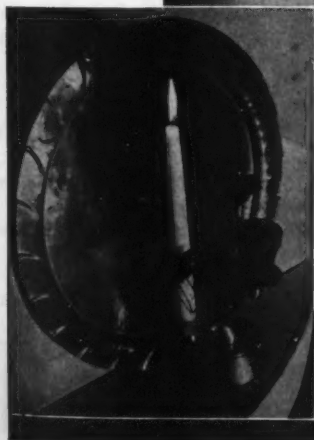


PHOTO BY SHANTI BAHADUR, professional photographer of Cleveland, Ohio. Taken and enlarged through Wollensak Velostigmats.* Mr. Bahadur, who was born, raised and educated in India, is a keen enthusiast of pictorial photography. His beautiful compositions have been hung in local, national and international salons, and have received recognition from the Pittsburgh Salon of Photography four years in succession. In their professional work, Shanti Bahadur and his associates constantly use several Wollensak lenses. Improve *your* photography with a Wollensak.

*Reg. U. S. Pat. Office

For Movies, Candid, Enlarging, Action, Stills
WOLLENSAK OPTICAL CO.

IT'S A

Knockout

Haloid's New Projection Paper

HALOBROME

WINS ENTHUSIASTIC APPROVAL OF OUTSTANDING PHOTOGRAPHERS

Reports from leading photographers state that for better enlargements at less cost it is hard to beat Halobrome's beautifully balanced emulsion. Specifically designed to the specifications of experts, Halobrome proves every claim. Halobrome delivers acceptable prints even when 50% over-exposed or under-exposed...develops easily within a development range of 45 seconds to 4 minutes...stands forced development without fog...and reproduces every detail of negatives with "contact" beauty.

Only **\$1.00** POST PAID

HALOBROME TRIAL KIT

Here is your chance to test this new projection paper in your own darkroom. Write for kit today. Each Kit contains these 6 favorite surfaces packed in individual envelopes of 4 sheets each in the popular 8 x 10 size.

- | | |
|-----------------------|-----------|
| White Semi-Matte | —Grade EE |
| White Glossy | —Grade FF |
| White Matte | —Grade AA |
| White Egg Shell | —Grade GG |
| Chamois Smooth Lustre | —Grade JJ |
| Chamois Egg Shell | —Grade PP |

All Double Weight Stock

Not supplied only with surfaces listed above.

MAIL COUPON TODAY!

Enclosed please find \$1.00 for which please send me one Halobrome Trial Kit consisting of 4 sheets each of 6 favorite surfaces, 8 x 10 in. (Send Cash, Check or Money Order).

Name.....

HALOBROME HAS EVERY FEATURE OF THE IDEAL PROJECTION PAPER

1. EXTRA RICH EMULSION...for best possible reproduction.
2. UNIFORM CONTRAST...dependably maintained from lot to lot.
3. UNIFORM EXPOSURE SPEED...uniformly maintained from lot to lot.
4. UNIFORM TONE VALUE...in various contrasts.
5. WIDE RANGE OF CONTRAST...4 standard contrasts PLUS an extra softer contrast.
6. EXCEPTIONAL EXPOSURE LATITUDE...acceptable prints even when 50% over-exposed or under-exposed.
7. EASY DEVELOPMENT...45 seconds to 4 minutes in standard metol-hydroquinone developer.
8. STANDS FORCED DEVELOPMENT WITHOUT FOG.
9. CONTACT QUALITY...uncommon brilliancy and depth.

HALOBROME

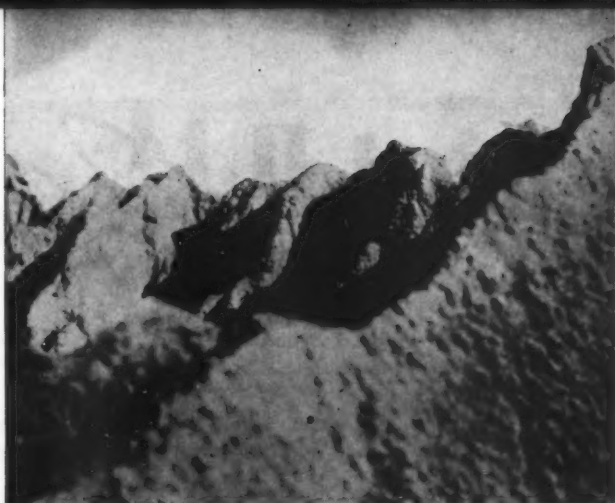
THE HALOID CO., ROCHESTER, N.Y.

OFFICES: Boston, 141 Milk St.; Chicago, 608 So. Dearborn St.; Detroit, 144 Lafayette St.; Los Angeles, 714 So. Hill St.; New York, 330 West 42nd St.; Philadelphia, 1015 Chestnut St.; San Francisco, 222 Kearny St.; Washington, 15th and K Sts., N.W.
Texas and Oklahoma Distributor: JNO. J. JOHNSON, 1912 North St. Paul St. Dallas

1. Is this the peak of an inaccessible mountain range, a crest of the Cordilleras or a backyard sandtrap? The foreground gives it away by being out of focus. Taken with an Agfa Clipper Special camera, f16, 1/50th second.

2. Rule two for effective simulation of mountain scenes is, "Get Shadows." Taken about mid-day, this snapshot lacks the effect of height and distance.

3. Get far enough away to keep the entire picture in focus, get good lighting, and close up enough for the effect of size, but above all, keep the real skyline out of the picture. The photographer in the foreground also indicates that the "mountains" are not so high, relatively.



MOUNTAINS *out of Molehills*

By GEORGE F. JACKSON

IT is easy to make dramatic shots that will fool your friends into imagining you have climbed wild and inaccessible mountain ranges—until you pull out a print like Fig. 3 (above) that gives away your secret.

At a convenient hillside that has been eroded or excavated, your camera can go "on location" with a great deal less trouble and expense than would be engendered by any Hollywood company

bound for the Andes, or even our own Rocky Mountains.

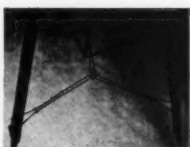
Placing the camera at or near the ground will provide "worm's eye" shots like Fig. 1. Use a yellow filter and, if possible, include a cloudy sky.

Fig. 2 illustrates a "bird's eye" or aerial view. The corner of an aeroplane wing can be provided with a piece of tin or cardboard on the set, or printed in later from a separate negative of a real plane.

BUILD IT Yourself

Tripod Brace

To make a tripod brace from clothes hanger wire, straighten three wire hangers and bend each in a long narrow loop about a foot long. Bend the open ends into hooks for gripping the tripod legs. Make three sliding sleeves or collar from short lengths of wire to tighten the loops around the legs. The loops are fastened in the center by a bolt and wing nut, making the brace adjustable and collapsible.—*George Carlson.*



Metronome for Timing Enlargements

An efficient instrument for timing enlargements is a musician's time-keeper—the metronome. Hands and eyes are left free for dodging or other manipulations. A metronome ticks loudly and clearly, and can be set to tick once every second. They are priced from \$2 to \$5.—*Emile Aletti.*



Ferrotypes Plate Case

Protective storage for ferrotypes plates can be made from a sheet of heavy corrugated cardboard and as many blotters as there are plates. The corrugated board should be a little wider than the length of the ferrotypes tins to be accommodated, and a little longer than twice the width of the tins. Then, when folded in the center in book form, the corrugated board will completely cover the ferrotypes tins.

Use the blotters as leaves to separate the individual plates. Sheets of newspaper are also satisfactory. A heavy rubber band holds the case securely.—*George Carlson.*

Dodging Screens

A dodging and vignetting screen can be made from Kodaloid, a red, transparent material. The entire picture can be seen while dodging, but the red color of the Kodaloid prevents the paper from being fogged. Several

sheets, with various sized holes can be used. Cost of Kodaloid is about 25c per square foot.

—*Roy F. Kaiser.*

Focusing Hood Extension

A folding extension hood for reflex cameras makes for clearer vision on the ground glass. The extension may be made from four pieces of cardboard about five inches long and as wide as the front and back of the camera hood, and two more pieces as wide as the camera hood sides. Cut these last two pieces down the center lengthways, and tape each pair of halves together on the outside with adhesive tape.

Tape all four pieces together on the inside corners, forming a square. The two side pieces act as hinges to make it collapsible. The hood should be blackened with india ink or black shoe dye.—*George Carlson.*



Composing the Print

For deciding how to trim prints, an ordinary enlarging easel is a convenient and practical accessory.

Put the unmounted print into the enlarging easel and adjust the marginal guide to hold the print flat. Place the easel in a vertical position—on an artist's easel or propped on a chair—for tentative viewing. Then judge the picture from a distance of several feet, as it will be when mounted. Readjust the marginal guides until the resulting composition is entirely satisfactory, and run a pencil around the inside of the marginal bars as guide lines for the cutting knife.

Viewing a print in this manner before trimming enables judging the composition from a distance, as it will be seen when hung.—*Raub.*





Introducing . . .

"CONTROL" Enlarging for Prints of Salon Quality

THE MCM PHOTOMETER

A precision instrument for measuring the light projected by your enlarger—for determining the exact printing time and exact contrast of paper to match each negative.

The MCM Photometer is even more sensitive than your costly photo-electric exposure meter, yet its simple rugged design enables the price to be set within reach of all.

\$4.85 with complete instructions

THE HAYNES GRAY-SCALER

The secrets of high-key, low-key and normal full scale prints at your fingertips! The Haynes Gray-Scaler offers to the amateur a simplified way of producing gray scales of laboratory quality for all your enlarging papers. When used with the Photometer, these Gray Scales enable you to forecast and control the exact tonal values of your finished prints.



75c

Including 15 page manual with completely detailed instructions and sample set of Gray-Scales.

A Worthy Companion of Willo-White



NOW AVAILABLE IN
PINT SIZE CAN QUART SIZE CAN

95c

\$1.80

Manufactured expressly for us to fill a long wanted dark room necessity for coating Trays, Tanks, Sinks, etc.

A strong deep black that is elastic and will not crack or blister.

It is excellent for waterproofing new materials, and can be used as a surface preservative for almost any material.

WILLO-BLACK dries within two hours.

WORLD'S
LARGEST
EXCLUSIVE
CAMERA
SUPPLY
HOUSE

Willoughbys

110 WEST 32ND ST., N. Y.

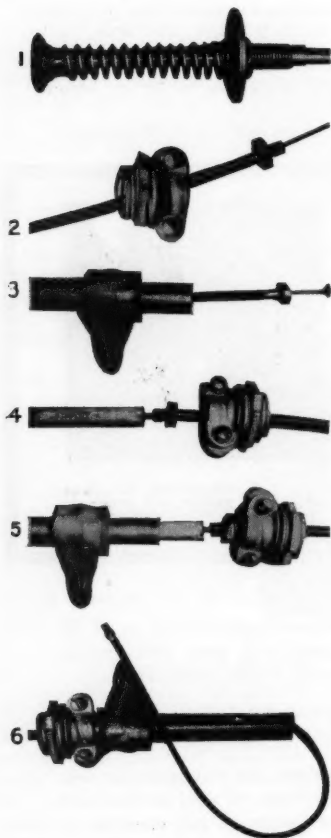
MAIL
ORDERS
FILLED

Remote Control Cable Release

By VICTOR WASSON
Illustrated by the Author

AN Open Sesame to self-portraiture is a harmless looking gadget that can be quickly assembled from the standard parts listed below. They are obtainable in most hardware and auto supply stores at approximately the prices listed.

One cable control, such as is used to operate an automobile choke from the dash	\$.19
One Romex box coupling, used by electricians in taking leads from connection boxes. (Be sure to get the Romex rather than the BX coupling)	.04
One 3/16" Hexagon nut of proper thread to thread over the spiral cable control casing. See illustrations 2 and 4 and "try it before you buy it."	.01
One five-inch length of brass or copper tubing large enough to allow your cable release to pass through freely	.05
One compression spring to fit over the choke control handle as shown in Fig. 1.	.08
A short piece of dowelling	.01
One 1/2" pipe clamp	.01
	.40



Pull the handle of the cable control all the way out of its sheath, wire and all. Cut a piece of the compression spring such a length that when the spring is slipped over the handle and the handle pushed in, the spring will push it out again. Slide the spring over the wire and up onto the handle and shove the wire back into the cable casing, so that the operating end looks like Fig. 1. The wire protruding from the other end moves in and out as the handle is pushed in and springs out.

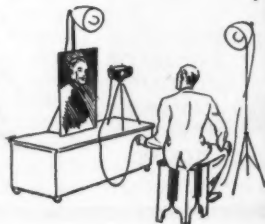
Fig. 2. shows the Romex coupling slipped over the other end of the cable and the hexagon nut threaded onto the spiral casing. The nut prevents the cable from backing out through the coupling.

Compress one end of the brass tube so that the cable release can still pass through the end of the tube but cannot go farther through than the finger flange, Fig. 3, on the cable release. Bend the pipe clamp around the tube so that the holes coincide.

Punch a nail hole in the end of a short piece of dowel and stick it on the control wire of the cable, Fig. 4. Push the dowel, which should fit freely, into the metal tube until it touches the cable release plunger that went in ahead of it, as in Fig. 5.

Slide the Romex coupling up the cable and onto the handle (Page 115, please)

- (1) A length of spring slipped over the control handle returns the plunger after the exposure is made.
- (2) The Romex coupling and the hex nut in place.
- (3) The cable release goes in the brass tube. A piece of inner tube insures a tight grip for the pipe clamp.
- (4) A short piece of dowel is fitted on the control wire. This dowel should be the same diameter as the plunger on the cable release.
- (5) The dowel fits down against the cable release plunger inside the brass tube.
- (6) The Romex coupling grips the brass tube when the screws are tightened and the job is complete.
- (7) Sketch showing the device in use.





Tuckered Out



MASTER FEATURES

★AUTOMATIC "HIGH LIGHT," "LOW LIGHT" SCALES—provide greater scale length with utmost readability; no confusing, congested numbers.

★EXTREME SENSITIVITY—gives accurate settings in light as low as 1/10 candle per square foot.

★INCREASED BRIGHTNESS RANGE—provides for measurements in extremely bright light, up to 1600 candles per square foot.

★LIMITED VIEWING ANGLE—gives better pictures outdoors as well as for color and ciné work.

★FLUORESCENT . . . TUNGSTEN . . . DAYLIGHT . . . accurate settings under all types of lighting.

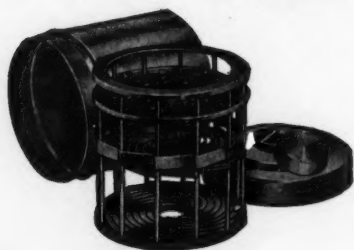
★Rugged instrument movement and hermetically sealed photo-cell assure dependability . . . improved calculator dial with speeds to 800 WESTON.

... but just before "turning-in", he was heard to remark that there would be thousands of happy photographers this Christmas morn, and a vast improvement in pictures all through the year . . . so many MASTERS were in his pack. However, if he left no MASTER in your stocking this year, don't wait for his return trip. Remember, there's a full year of picture opportunities between! Visit your nearest dealer today, and get yourself a MASTER or whichever WESTON model suits your needs. It will make 1940 the best "picture year" you ever enjoyed. Weston Electrical Instrument Corporation, 649 Frelinghuysen Avenue, Newark, New Jersey.

WESTON *Master*
THE ULTIMATE IN EXPOSURE METERS

NIKOR

STAINLESS STEEL
ANTI-FOG **TANKS**



New Adjustable Model

For Cut Film and Film Packs
From $2\frac{1}{4} \times 3\frac{1}{4}$ " to 4×5 "

HERE is an adjustable NIKOR TANK that takes up to 12 cut film or film pack negatives from $2\frac{1}{4} \times 3\frac{1}{4}$ " to 4×5 " or postcard size. Quickly adjusted to fit film of any size. Film is inserted in complete darkness without danger of buckling or scratching. Requires from 24 to 36 oz. of solution, depending on size of negative. Made entirely of welded stainless steel that is absolutely impervious to photographic chemicals. Easy to keep spotlessly clean. Price complete, only. **\$11.50**

Other Models for All Roll Film from 35mm. to Postcard Size

Model 35 Nikor, develops a roll of 35 mm. film in only 8 oz. of solution	\$4.75
Model 33 Nikor, develops two 35 mm. rolls at same time in 16 oz. of solution	\$8.25
No. 1 Nikor, for V. P. (127) film	\$5.75
No. 2 Nikor, for $2\frac{1}{4} \times 3\frac{1}{4}$ " or 6x6 cm. (120) film	\$5.75
No. 4 Nikor, for $2\frac{1}{2} \times 4\frac{1}{4}$ " (116) film	\$5.75
No. 5 Nikor, for 122 (Postcard) film	\$7.50
No. 6 Nikor, for 118 (Eastman film only)	\$7.50
Extra deep Nikor Tank (no reels included), for multiple developing of four No. 33 or No. 35 reels; three No. 1 reels; two No. 2 or No. 4 reels; one No. 5 reel; with rod on which to string reels	\$6.00
Extra Reels, all sizes, each	\$2.85
Nikor Washing Tank, especially designed to flush out all chemicals through drain at bottom	\$6.00

At leading dealers everywhere.

BURLEIGH BROOKS
INCORPORATED
127 WEST 42ND STREET NEW YORK



By A. J. EZICKSON

THE foremost woman authority on etiquette recently was seen crawling around on her hands and knees in a Boston hotel room. The scene was hardly in keeping with the dignity of her position. What had happened? A photographer had dropped a camera gadget and needed help in finding it. So Emily Post got down on all fours and helped look for it.

The battered and storm-tossed President Harding, with dozens of injured passengers and crew members aboard, had finally sleeked its nose into New York's calm waters. A battery of news photographers stormed the decks, and made shot after shot of the storm victims. One wife and husband pointed to each other's black eyes. Another had his arm in a sling. One gentleman who had suffered multiple contusions, sat half-heartedly for the photogs on the after deck. One of the lensmen noticed that he moved one leg rather awkwardly. "Say, what's the matter with your leg?", inquired the cameraman. The subject coyly lifted his trouser leg, revealing a bandage which wound up from ankle to knee. And then a half-dozen news cameras recorded the injured member, the while he forced a smile through his pain. "And that", a young woman standing nearby remarked, "is a shipboard leg picture to end all leg pictures."

Lamps for the "oil" of the cameraman, every conceivable size, and every conceivable type of bulb—flash, flood and enlarger—at the recent General Electric show in New York City. There were the new fluorescent lamps, cool to the touch and soft to the eye, special bulbs for color photography, flash bulbs ranging in size from the new bantam No. 5 to the giant 5000-watt movie flash, a movie in slow motion of photo-flash lamps with synchronizers set off with a back-shutter exposure of 1/1000th of a second, and a camera, of a size a giant would love to fondle, illustrating how a flash bulb synchronizes with the focal plane shutter, and with the between the lens shutter. In one corner, a performance of acrobats of which amateurs shot

flash after flash in a spirited competition for prizes. Other features which stopped the spectators . . . the quick-break filament G. E. Mazda photoflash bulb which flashes on a one-cell penlight battery . . . a hammer striking fruitlessly against the new bulbs which are lacquered inside and out to reduce the hazards of breaking . . . a graphic comparison with the use of paper, matches, toothpicks and twigs, to the flashes of foil, aluminum wire and special focal plane bulbs.



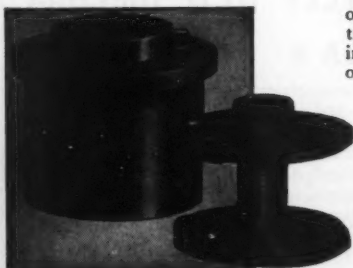
Miss Harriet Platnick, young, pretty wizard of the news lens, who doesn't mind going traipsing around in all hours of the day and night getting shots for the front page of the New York newspapers, is quite an attraction at the new New York Municipal Airport where she covers the arrivals and departures of the Clipper planes.

The Army-Navy grid classic was the toughest assignment of the entire football season. A steady drizzle and lowering clouds reduced visibility

to a few yards. Through the gloomy mist, the news photogs strained eyes to catch the movements of the ghost-like figures. They shot wide open at a 45th—and trusted to luck that something would show up on their films. Their prayers were answered, and with the use of super-press film, the results were astonishing. The darkroom men helped in the process. Twenty minutes of developing, and the use of intensifier, brought out more than any one of the 120,000 spectators in Philadelphia's Municipal Stadium could glimpse—and pictures of the game were reproduced in newspapers everywhere that night.

During the recent Dominion swimming championships at Esterel Sporting Club in Montreal, Ralph Adams, writing for the Montreal Star, reported that of 500 spectators about 100 of them had cameras, and that the press photographers assigned to the job had rough going. He writes: "Our Joe Dolan (veteran Star photog) was all set for his big moment of the day. When back of him came a half-squawk, half-roar. Joe looked around, ready to leap to safety from the path of an onrushing speedboat or a falling rock, grateful for a timely warning. There was no speedboat, no rock. Just an irate amateur fan, sitting on the starting float, bellowing for the right of way. It was the same throughout the meet."

ALBERT System of Scientific Development



Albert 4-in-1 Tank \$3.75
Roll Film

Always firm and easily handled in the dark, the Albert 4-in-1 is adjustable to the 4 standard roll film widths (Nos. 116, 120, 127 and 35 mm film).

Positive-locking. "4-in-1" center post adjustment, can't slip to crush or buckle film. **LIFETIME GUARANTEED.** Full length channel permits thermometer to reach to bottom of developer solution. Positive light-tight cover. **BIG** inlet and concave cover top for speedy filling, no spilling and speedy draining of developer, fixer or water.

ALBERT SPECIALTY CO. 231 S. Green St. Dept. A-7 Chicago, Ill.

Purchased together or singly, these Albert specialties offer improved developing results. The Agitator provides true "scientific" agitation—an automatic continuous gentle intermittent action that eliminates the danger of under- or over-agitation often resulting from unscientific hand operation.

Sturdy chemical-proof mechanism completely enclosed—Simple electric operation; no complicated motor to get out of order—Fits all modern roll film tanks—AC or DC current.



Albert Automatic ELECTRIC Agitator \$3.95

See Both At Your Dealer

ALBERT SPECIALTY COMPANY
231 S. Green St., Dept. A-7, Chicago, Ill.

Please send me the full facts about the New Albert Agitator and 4-in-1 Tank.

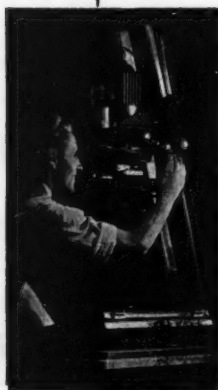
Name
Address
City..... State

SALONS

Closing Date	Name of Salon	Number of Prints and Entry Fee		For Entry Blank, Write to
January 12	Seventh National Collegiate Salon of Pictorial Photog.	4	\$1.00	Jerome Saemen, Salon Chairman, U. of Wisconsin Camera Club, Memorial Union, Madison, Wis.
January 12	Seventh Wilmington International Salon	4	\$1.00	Miss Muriel E. Place, Secretary, Delaware Camera Club, P. O. Box 961, Wilmington, Del.
January 15	Second Annual Montana Photographic Salon	4	\$1.00	Ed. T. Simons, Salon Secretary, 208 So. 5th St., W., Missoula, Mont.
January 23	Fourth Virginia Photographic Salon (Open only to persons born or now living in Virginia)	No limit; 25 cents per print, \$1.00 minimum		Miss Marie D. Powell, Secretary, Salon Committee, 1714 Park Ave., Richmond, Virginia.
February 1	Seventh International Salon, Pictorial Photographers of America	4	\$1.00	Ira W. Martin, Salon Director, 10 East 71st St., New York City.
February 7	Third Scholastic Salon of Photography	4	No fee	The American Institute, 40 East 42nd St., New York City.
February 15	Fifth Annual National Salon, St. Petersburg Camera Club	4	\$1.00	Homer Agee, Salon Chairman, 105 Seventh St., So., St. Petersburg, Fla.
March 15	Third Salon of Photography, Camera Club of Fitchburg	4	\$0.50	Elsie L. Lowe, Secretary, Pearl Hill Rd., Fitchburg, Mass.
March 25	Second Annual Salon of Photography, Newport Camera Club	4	\$1.00	Secretary, Newport Camera Club, 41 Mary St., Newport, R. I.

Rarely do news lensmen get their pix without comment from their subjects. President Joseph Curran of the National Maritime Union, photographed while appearing before the Dies Committee in Washington, said sharply: "Are you trying to take pictures for the funny papers?" Asked Chairman Dies, "Do they disturb you?" This stumped Mr. Curran.

News cameramen match honors with movie stars! Arthur Abfier, staff photographer with the Louisville Courier-Journal, was assigned to accompany a three-day Good Will Tour sponsored by the Louisville Board of Trade. At Hawesville, Ky., the local belles crowded around Abfier to get his autograph, ignoring the prominent names for whom the entire trip had been organized.



TWO COMPLETELY NEW OMEGAS

SUPER OMEGA B

Super Omega B—featuring geometrically correct distortion control and negative focusing—incorporates every modern advance in enlarging construction. Tilting negative carrier (on turntable), together with tilting baseboard, assures scientific correction of linear distortion. Negative focusing permits use of one set of double condensers for all lenses. Inclined steel-girder supports. New type dustless film carrier. Dyna-thermal ventilation. For all film up to $2\frac{1}{4} \times 2\frac{1}{4}$ inches. \$77.50 without lens.

Omega C-II takes negatives from $3\frac{1}{4} \times 3\frac{1}{4}$ inches down to double frame 35 mm. film.



OMEGA C-II

Omega C-II has all the features of the Super Omega B except negative focusing and distortion correction. Also \$77.50 without lens. Write Dept. MIS.

Distortion correction with the Super Omega B gives needle-sharp images at full lens aperture.



HABER & FINK 16 WARREN ST., N.Y.C.
N.C. Tel. BA-7-1230

Kamera Kwiz

(Continued from page 82)

9. The making of enlargements can well be called "stretching the truth." Can you sort the true statements from those which have been stretched until they are false?

A. *Wielders of the 10% bromide bottle will know that excess bromide produces olive tones.*

True False

B. *Montage effects are produced in the camera, not with the enlarger.*

True False

C. *When making separation negatives, it is imperative that the enlarger be light-tight.*

True False

D. *A condenser enlarger heats up faster than a diffusion-type enlarger.*

True False

Answers to KAMERA KWIZ

1. Yes, too great an enlargement would exhaust the sharpness of the image.

2. He makes one print from two or more negatives.

3. Stop down the lens.

4. Chloro bromide.

Flat field

Blue toner

Negative carrier

Print trimmer

Foot switch.

5. The negative was too large for the lens used. The enlarger lens must have at least sufficient covering to project light from all parts of the negative. A surplus is desirable.

6. A 16x20" print from a 1x1 1/4" negative is a 16 diameter enlargement, a 1600 percent linear increase, and 25 1/2 (25.6) times increase in area.

7. Melting or discoloration of the cement in the elements. If the rays from the condensers converge on one of the elements, the heat may be great enough to discolor the Canada balsam in a cemented lens.

8. Film to lens to paper.

9. A. True.

B. False, they can be produced either way.

C. True, the pan materials used would be fogged by stray light.

D. False, the type and intensity of the lamp, not the optical system determines the amount of heat.



SUPER KODAK 620, F3.5.....	\$157.50
Leica G, Summar F2, ev. case.....	119.50
Leica D, Elmar F3.5, ev. case.....	69.50
Leica IIIB, Summar F2, ev. case.....	149.50
Kodak Retina II, Xenon F2.....	84.50
Contax II, Sonnar F2, ev. case.....	139.50
Contax III, Sonnar F2, ev. case.....	164.50
Contax III, Sonnar F1.5, ev. case.....	179.50
Contax II, Sonnar F1.5, ev. case.....	164.50
Zeiss Sonnar, 18cm., F2.8 Lens, Miflex Attach.....	324.50
Dollina II, Xenon F2.....	57.00
Dollina II, Xenon F2.8.....	44.50
Argus C2, F3.5, coupled rangefinder.....	18.50
Robert I, Zeiss Tessar F2.8, ev. case.....	74.50
National Graflex, Ser. II B & L F3.5.....	54.50
Perflex 44, F2.8, coupled rangefinder.....	36.00
Automatic Rolleiflex, Tessar F2.8, ev. case.....	110.00
Rolleicord II, Zeiss Triotar F3.5.....	63.00
Rolleicord Ia, Zeiss Triotar F4.5.....	47.50
Univex Mercury, F3.5.....	18.50
Contaflex, Sonnar F1.5.....	179.50
Korelle Reflex II, Zeiss Tessar F2.8.....	98.00
Korelle Reflex I, Radionar F2.9.....	64.50
Korelle Reflex II, Radionar F2.9.....	84.50
Exakta B, chrome, Zeiss Tessar F2.8.....	112.50
Exakta B, chrome, Zeiss Tessar F3.5.....	97.50
Jubiletta, Trioplan F3.5.....	26.50
Kodak 35, F3.5 special.....	25.00
Rangefinder Benar, Helomar F3.5.....	49.50
Zeiss Super B, latest, F2.8.....	105.00
Contameter for Super B.....	48.00
Weston Master exposure meter.....	18.00
S. S. Photrix, exposure meter.....	12.50
Mini, Electric meter.....	9.95
Super Sport Dolly, Zeiss, Tessar F2.8.....	61.50
Maximar A, 6 1/2 x 9, Z. Tessar F4.5.....	48.00
Maximar B, 9x12, Z. Tessar F4.5.....	54.50
Kodak Reocomar 18, Kodak Anas. F4.5.....	37.50
Kodak Reocomar 33, Kodak Anas. F4.5.....	45.00
Speed Graphic 2 1/4 x 3 1/4, Zeiss Tessar F4.5.....	84.50
Speed Graphic 3 1/4 x 4 1/4, Zeiss Tessar F4.5.....	94.50
Simmon Omega B, no lens, to 2 1/4 x 3 1/4.....	32.50
Simmon Omega C, no lens, to 2 1/4 x 3 1/4.....	59.50
Solar enlarger, to 2 1/4 x 3 1/4, Wollen F4.5.....	32.50
Super Maltiflex, Benar 4.5, new, 2 1/4 x 3 1/4.....	67.50
Leitz Valoy, enlarger, no lens, 35mm.....	37.50
Exakt, enlarger 2 1/4 x 3 1/4, F4.5.....	69.50
Praxidos, 4x4cm, F4.5.....	22.50
Ideal enlarger, 35mm, F4.5 Benar.....	27.50
Filmarex O, 2 1/4 x 2 1/4, F4.5.....	32.50
Filmarex 6x6, F4.5.....	49.50
9x12 Laborant, F4.5, Benar.....	94.50
Leitz Flytt, 4 1/4 x 6cm, easel, Leitz lens.....	49.50
Leitz Focamat I, 35mm, no lens.....	54.50
Kodak Precision, no lens, 2 1/4 x 3 1/4, new.....	67.50
Sun Ray Craftsman, 2 1/4 x 3 1/4.....	11.95
8mm. Bolex, Kine Plasmat F15.....	195.00
16mm. Bolex, Leitz Hektor Rapid.....	199.50
Keystone A7, F2.7, seven speeds.....	50.00
Cine Kodak Magazine, F1.9.....	84.50
16mm. Kodak Model K, F1.9 Anas.....	59.50
8mm. Kodak Model 60, F1.9 Anas.....	49.50
8mm. Keystone K8, F2.7.....	24.50
New 8m. Kodascope 70, 500 watt (less bulb) new.....	53.55
16mm. Kodascope Model G.....	99.50
Keystone A81, 750 watt, F16.....	52.50
Kodaslide II, 5" lens.....	26.75
Graflex cameras, all sizes, all series.....	Specially priced

EASY TERMS ARRANGED

Many other bargains not listed above included in this sale.
Write for new Bargain List NOW!

DEPT. M-1

All Bargain offering while used are in equal to new condition and sold under our 10-day money-back guarantee.



HABER & FINK INC.
16 WARREN ST. NEW YORK

TIME O LITE

The all electric, fully automatic timer.

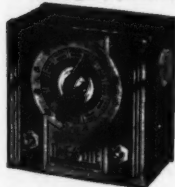
The handiest piece of equipment in any dark room.

SAVES TIME . . . NO SPRINGS to rewind or reset.

Makes one picture or a thousand from the same negative.

Just Push the Button . . .

- Dependable . . . accurate . . . guaranteed to a split second.
- Built for a lifetime of service.
- Has self-lubricating synchronous motor.
- Ready to use, plug into any A/C outlet attached to any enlarger.
- Used to control all electric photographic devices . . . enlargers, printers, floodlights, photo engraving, etc.



Model P-39 — Professional . . . makes your contact printer automatic . . . takes maximum load of 1500 watts

\$17⁵⁰

Model M-39 — 750 Watts, 110 Volts, A/C

\$12⁵⁰

Model P-39

Ask Your Dealer

Industrial Timer Corporation

101 EDISON PLACE

NEWARK, N. J.



"Come Closer"

with

**DALLMEYER
Telephoto LENSES**

Many hundred camera owners testify to the increased fun and usefulness of their camera with these precision made Dallmeyer Telephoto Lenses—world famous for accuracy.

Reasonable in price, these superior telephoto lenses are made to fit most all movie and still cameras.

At your dealers—or write for descriptive circular "P.D.", mentioning your make of camera, direct to—

MEDO

15 West 47th Street,

New York City

Capture the "Life" of the Object

(Continued from page 49)

around your motif several times and watch it from many different points before photographing.

Take a walk along the beach, if you live near one, and you will find lots of things laying in the sand, from pieces of wood to boxes and bottles. There is life in the sand itself (Fig. 2) if you are able to see what it has to say. Or in a bottle someone threw away (Fig. 4).

This bottle was laying in the dry sand near the surf of the ocean. Brine had washed it absolutely clean and the sunlight gave it a strange plastic feeling through its shadows. It is not the bottle alone that made me take the photograph but more the strangeness and loneliness of an object which seemed to me almost displaced in the white sand planes of the beach, where no sign of man could be observed. In this surrounding, the bottle in its complete form and artificial but simple beauty came to life as a being with a personality, and this personality was what interested me.

Fig. 9 could be called mystic or perhaps surrealist. It is nothing tricky or in any way complicated and intellectual. It had just been observed in nature. The only additional help to the impression was given by turning the print up side down. It is a reflection of a person in a pond, as you will easily see when you turn it around. The sky and the sun also reflect in the water. Why does the person have no head? Because it looks down into the viewfinder of its own camera to take a picture, and the perspective of the reflection seen by the camera seems to cut the head entirely off.

In the city you find buildings and machinery. You see them every day, but have you ever watched them? Do you look on the pavement on your way home, observe the change of the light, the effect clouds make between steel constructions? You will find life in everything. Even in the head of a horse in a merry-go-round. (Fig. 11). A dead object, man-made, it

SEE THESE PHOTO EXHIBITS THIS MONTH

City	Street Address	Dates Open	Name of Exhibition
Des Moines, Iowa	West 4th and Keosauqua	Jan. 1 to 22; 8 a. m. to 11 p. m.	Fifth Annual Des Moines International Salon
Gary, Ind.	Central Public Library	Jan. 12 to 25; 9 a. m. to 9 p. m.; Sunday, 2 to 6 p. m.	Camera Craft Monthly Print Competition, Group 14
Los Angeles, Cal.	Los Angeles Museum, Exposition Park	Jan. 1 to 31; 10 a. m. to 4 p. m.; Sunday, 2 to 5 p. m.	23rd Annual International Salon, Los Angeles Camera Pictorialists
Minneapolis, Minn.	Minneapolis Institute of Arts	Dec. 6 to Jan. 7; 10 a. m. to 5 p. m.; Sunday, 1 to 5 p. m.; not open Mondays (Wed., Sat. and Sun. free)	Eighth Annual Minneapolis Salon
Missoula, Mont.	University Art Building	Jan. 21 to 28; 1 to 9 p. m.	Second Annual Montana Photographic Salon
Norfolk, Va.	Norfolk Museum of Arts and Sciences	Jan. 7 to 28	Third Southern Salon (Second International)
Pittsburgh, Pa.	Buhl Planetarium	Jan. 10 to 31; 10 a. m. to 10 p. m.	Second Western Pennsylvania Salon
Rochester, N. Y.	Memorial Art Gallery	Jan. 15 to Feb. 25; 10 a. m. to 6 p. m.; Sunday, 2 to 5 p. m.	Fifth Rochester International Salon
Springfield, Mass.	George Walter Vincent Smith Art Gallery	Jan. 3 to 24; 1 to 4:30 p. m.; Sunday, 2 to 5 p. m.; not open Mondays	Second Springfield International Salon
Springfield, Mass.		Jan. 3 to 31	Springfield Salon of Photographic Art (Second International)
Yonkers, N. Y.	Yonkers Camera Club, Y. M. C. A.	Jan. 16 to 31	Annual National Salon of Photography, Yonkers Camera Club

seemed alive to me and I tried to express it, waiting for a fortunate moment, when the head moved through a beam of sunlight. It even seems to listen to the music.

Fig. 8 shows that almost everything

can be turned into a photographic subject. The objects on the four paddles are two stockings and pair of sneakers put up to dry. Nothing extraordinary, nevertheless enough to make a picture that has a slight

Announcing **EDWAL** Liquid **FIX**



THE NEW READY-MIXED ACID HARDENING FIXER

**That You Don't Have to Discard
After Each Use**

It's stable! How do we know? We heated it at 150°F for 250 hours without any effect on its efficiency. We froze it at 70°F below zero. We even boiled it. It was not affected by any of these tests.

Out of 20 different fixing baths, Edwal Liquid Fix *alone* passed all tests. Nothing to dissolve. Just dilute and use. Quart 60c. Makes one gallon. Order from your dealer today!

THE EDWAL LABORATORIES, INC.

Dept. 1M, 732 Federal St.,

Chicago, Ill.

CONTEST CALENDER

Open to	Subjects	Prizes	For copy of rules, write to	Contest closes
Anyone in the United States (except NBC employees and their families)	Pictures describing or symbolizing programs heard over the NBC-Blue Network	Monthly: \$100, \$50, \$25, and twenty prizes of \$5 each	"Adventures in Photography", National Broadcasting Co., RCA Building, Radio City, N. Y.	Monthly. (Pictures arriving too late will be held next month)
Amateur photographers	Work of Philadelphia charitable institutions for the aged and infirm	Photographic merchandise	United Charities Campaign, 1336 Fidelity Phila. Tr. Bldg., Philadelphia, Pa.	Jan. 20
Anyone except staff members	Authentic antiques	First, \$25; 2nd, \$15; 3rd, \$10; and five subscriptions to the magazine, <i>Antiques</i>	Miss Alice Winchester, Editor, <i>Antiques</i> , 40 East 49th St., New York City	Feb. 1
Anyone	Two sections: Pictorial and news pictures. (Third Annual Photography Competition.)	In each section: First, \$40; 2nd, \$10	A. Clarence Smith, Asso. Prof. of Journalism, Kent State University, Kent, Ohio	Feb. 15 (Entry fee, \$1.00 minimum)
Amateur photographers in Metropolitan New York area	Contrasts of daily life arising in the rapid growth of the Borough of Brooklyn	First, \$50; 2nd, \$25; 3rd, \$15	Esther G. Sticht, Registrar, The Institute at the Academy of Music, 30 Lafayette Ave., Brooklyn, N. Y.	Feb. 17

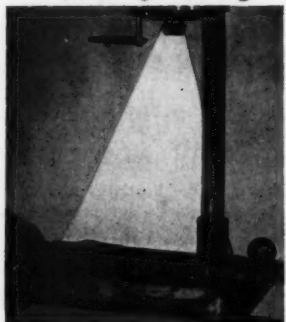
touch of the mysterious.

Ask yourself, in the search for the life of the object, "What are the functions of this thing?" On a carriage, it is the wheels and their construction (Fig. 10). A locomotive has the function of speed and at the same time of power. Speed is expressed through the form and power of its driving mechanism (Fig 1). Make this

kind of analysis *before* shooting.

To portray the life of the object in a picture, you may have to sit on the floor or hang from a roof, but the aim should not be limited to the unusual and to the element of surprise. Seek to show the essence of the object. A photograph of some wheels can be just as full of life as an action shot of a football player.

NEW! DARKROOM MARVEL VISIBLE PRINTING LEROVISUAL PAPER DEVELOPER Under Any Enlarger SIMPLE TO USE



With LEROVISUAL you actually see the picture develop UNDER the enlarger.

DOES NOT FOG

(1) LEROVISUAL makes better enlargements and can be used with both chlorobromide and bromochloride papers.

(2) SIMPLE. The LEROVISUAL KIT comes to you containing, in the exact proportions, the different chemical ingredients of this secret formula.

(3) EASY TO USE. Immerse your paper in LEROVISUAL and then place it in the enlarger easel. Turn your enlarger light on for 10 second, or shorter intervals. Using safe-light, examine the print after each exposure. When tone values in every part of the print are exactly as you wish them, rinse print in clear water and immerse in hypo. THERE IS THE PICTURE YOU HAVE WANTED.

(4) You can control highlights and shadows with your hand or with a dodger as finely as an artist does with his brush. Composite pictures and photo montages are reduced to utmost simplicity.

(5) LEROVISUAL is economical to use. Any solution left in the tray is poured back into the bottle and used over and over again, as it does not become contaminated with reduced silvers. It saves developer, paper, and time. There is no guess work.

(6) LEROVISUAL KIT containing chemicals in correct proportions and sufficient amounts to mix 32 ounces of LEROVISUAL will be mailed postpaid in the United States upon receipt of \$1.00. Outside of the U. S. 10c additional. C. O. D. orders 15c additional.

Send for Your Kit Today PROMPT DELIVERIES

WHITVILLE COMPANY, Chrysler Bldg., New York, N.Y.

FOTO FUTURAMA

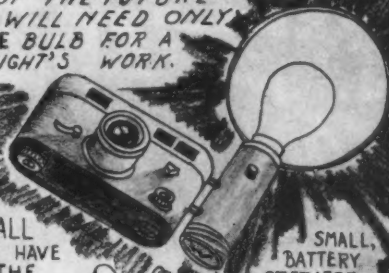
By WILSON

THE FLASH PHOTOGRAPHER
OF THE FUTURE
WILL NEED ONLY
ONE BULB FOR A
NIGHT'S WORK.

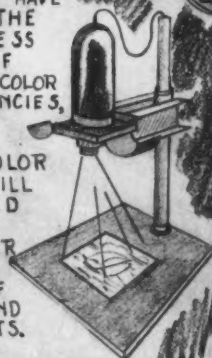
ADVANCED
WORKERS WILL BE
EQUIPPED WITH
MINICAMS
TAKING TWO
ROLLS OF FILM
OF DIFFERENT
EMULSIONS.
FOR INSTANCE,
ONE COLOR, ONE
PAN, OR AN INFRA
RED ROLL.
MOVABLE MASKS
WILL MAKE ANY
ROLL INSTANTLY
AVAILABLE.



ALL
WHO HAVE
SEEN THE
MATCHLESS
BEAUTY OF
NATURAL COLOR
TRANSPARENCIES,
LONG FOR
THE DAY
WHEN COLOR
PRINTS WILL
BE PRODUCED
ON COLOR
PRINTING PAPER
WITH THE EASE
AND RAPIDITY OF
TODAY'S BLACK AND
WHITE ENLARGEMENTS.

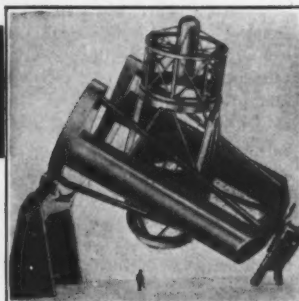


SMALL,
BATTERY
OPERATED
FLASH BULBS
WILL DELIVER
FIFTY OR MORE
FLASHES OF
100,000 LUMEN
BRILLIANCY.



Like the **WORLD'S LARGEST TELESCOPES**

ELWOOD ENLARGERS



Model of the World's Largest Telescope, now being completed on Mt. Palomar, near San Diego, California. Note the size of man directly under the reflector. Observation Chamber is in extreme top above reflector and is 6 feet in diameter. It will reveal the mysteries of the universe 1,200,000,000 light years from the earth. This telescope will have a reflector 200 inches in diameter—twice as large as the biggest now in service in the Mt. Wilson observatory near Pasadena.

Use Polished Reflectors . . . For More Accurate Light Control

● For maximum illumination and brighter, sharper images, the world's largest telescopes—are of the reflecting type. Reflector telescopes gather many times more light and can be made many times more accurate than refractor telescopes.

For the same reason, Elwood Enlargers use silvered and polished reflectors. They are scientifically correct and reflect many times more light than a refractor light system. The image is illuminated evenly to the extreme corners because a reflector can be made the correct shape. Only Elwood Enlargers have patented silvered reflectors. See them at your dealers or write for 78-page book now!

MODEL S
Studio
Enlarger
without Lens
\$36.50

Other Elwood
Enlargers
as low as
\$18.00
without Lens



ELWOOD PATTERN WORKS, Inc.

DEPT. 13, 125 NORTH EAST STREET, INDIANAPOLIS, INDIANA

Canadian Agents and Distributors: W. E. Booth Company, Ltd., Toronto and Montreal

IT'S A "SNAP" WITH SUPERFLASH!

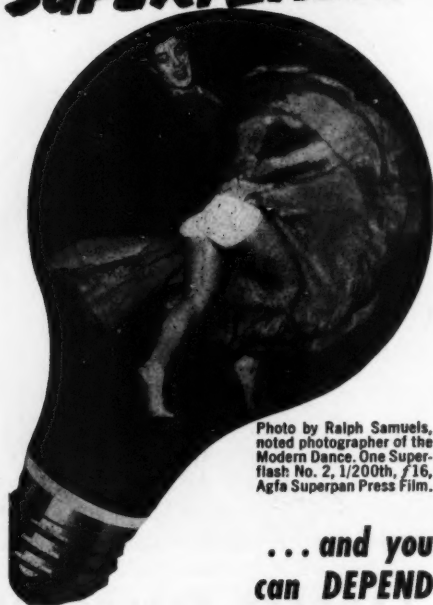


Photo by Ralph Samuels, noted photographer of the Modern Dance. One Superflash No. 2, 1/200th, f/16, Agfa Superpan Press Film.

... and you
can **DEPEND**
on it!

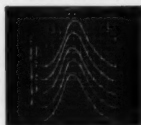
Simple . . . Safe . . . Sure—that's what flash shooting's like with Superflash! Simple—because Superflash's extra powerful, extra long-peak light flash, perfectly synchronized, uniform and controlled—makes it easy to get pictures "on the nose" . . . cuts down exposure errors.

Safe—thanks to Superflash's lens-clear, double safety jackets, safety spot, safety disc and anti-contact flashing features.

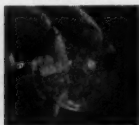
Sure—because you can depend on Superflash . . . to flash, to synchronize, to protect, to do everything you'd expect of the world's leading flash bulb! See your dealer. Or write Wabash Photolamp Corp., Brooklyn, N. Y.



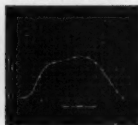
● INVISIBLE SAFETY JACKETS



● CONTROLLED UNIFORMITY



● PATENTED SAFETY SPOT



● EXTRA LONG PEAK FLASH

WABASH Superflash

AND WABASH SUPERFLOOD PHOTOLAMPS

Copyright 1940, Wabash Photolamp Corp.

COLOR CAMERAS

(Continued from page 62)

the plate into contact with pins built into the camera as a part of the optical system, so that the registration is accurate and positive whatever may be the variations in the holders.

The optical system is so designed that a set of separation negatives is exactly alike. The Devin pellicle mirrors which make this possible are made of a thin membrane about 5/10,000 of an inch thick which is cast on an absolutely flat metal frame. This extremely thin mirror does not bend the light rays as those made of glass do, thus eliminating all of the registration troubles which are caused by this bending effect.

The optical system is pictured in the diagram in Fig. 3. Part of the light that passes through the lens is reflected by the mirror, A, to the blue color filter B. The latter filters out all of the rays of light except the blue ones, and then passes to the plate C, and so forms the blue record.

Light is reflected by the second mirror, D, to and through the red filter E and thence to the plate F, to form the red color record. The remainder of the light passes to the back of the camera where it goes through the green filter, G, to form the green record on plate H.

Lerochrome Direct Color Separation Camera. This camera, Fig. 4, was designed by the Leroys, chief chemists of the International Research Laboratories. It is a single-shot camera with a chassis cast in one piece of aluminum, to prevent it from getting out of register. The mirrors in this camera (see diagram in Fig. 4) are made by a new process for silvering done with platinumized chromium in a vacuum. They are then dipped in a solution of uranium, a radio active metal, which, in turn, is reduced to a metallic state by a developing method, bringing the reflecting power to the highest peak.

THIS is the first of a series of articles by A. Frederick Collins, F. R. S. A., on the technical aspects of photography. He is the author of the recent book, "Photography for Fun and

Mon
-cient
His



tough
far cr
which
rail s
Zeiss

haps,
posed
forma
this cr
if the
the pi
A safe
the di
behind
The
parent
ject a



SNOW
Agfa S
yel

success
exposed
ing tim
impossi
reduce
experim

Ho

and at
transfe
This ri
ability.

Q. I
obtain
A. N
Librari
right, v
owners
tained i

Money" and a great many texts on other scientific subjects as well.

His experience goes back to the tin-type and wet-plate days. At the age of 13, he worked as a darkroom boy, and when a lens was given to him, he made a 5x7 inch camera for it by sawing up a cherry-wood table. Making a plate holder was the toughest part of the job. This camera was a far cry from Collins' favorite camera today with which he is seen in the accompanying thumb-nail snapshot, a Super Ikonta B, 2 1/4 x 2 1/4, with Zeiss Tessar f2.8 lens.



Being Critical

(Continued from page 78)

haps, maintain that the picture was not supposed to be a dramatic composition, but an informal picture of a working man at rest. In this case the picture would have been improved if the model's interest had been directed into the picture rather than out into blank margin. A safe rule to follow is to have more space in the direction in which the model is facing than behind him.

The printing time for SNOW SCENE apparently was too short, judging from the subject and the exposure. Hence the feeling of

"falling away" at the edges of everything in the picture. The reflecting power of snow is great even on a cloudy day and it may be that the negative was considerably over-exposed making it too dense for



SNOW SCENE. Foth Flex camera, Agfa Superpan Press film, light yellow filter, f3.5, 1/25th.

successful printing. Projection paper fogs when exposed for long periods making excessive printing time, necessitated by over-exposed negatives, impossible. If the dense negative is a "must" reduce it with a good reducer, taking care to experiment with discarded negatives first.

How to Copyright Pictures

(Continued from page 80)

and at that time may be in a position to restrain transfer to a third person by the photographer. This right, however, is dubious as to enforceability.

Q. Must an attorney be retained in order to obtain a copyright?

A. No. The procedure is simple and the Librarian of Congress, who has charge of copyright, will accept applications directly from owners of pictures. An attorney may be retained if desired.

SOLAR ENLARGERS

Perfect prize winning enlargements are easy with a Solar.

Five models for negatives from 35mm. to 5x7 in.—with or without condensers—with baseboard or special wall mounting brackets.

Dustless type negative carriers—wide span bellows—micrometric focusing—counter balanced head, plus a host of added refinements, make Solar the choice of amateur and professional alike.

Write for the Solar book on Enlarging. Page after page is loaded with valuable hints and instructions on projection printing. Ask for Enlarging Treatise \$1. It's FREE!

WRITE TODAY

BURKE & JAMES, Inc.

223 W. MADISON ST. • CHICAGO, ILLINOIS

MADE
IN
U.S.A.

PATS.
PENDING



Snap THIS -- Tonight

VICTOR Reflectors increase the effectiveness of Photolamp many times, make snapshots almost as easy indoors as out! Only two Photofloods in VICTOR Reflectors were used in making this picture: a No. 1 at the camera and a No. 2 to the right, slightly behind and above the subjects (distances 3 and 6 ft. respectively). Exposure on Panatomic X Film: 1/10 sec. at f/5.6 SEE YOUR DEALER—or write for our instructive folder.—Now.

James H. Smith & Sons Corp.
143 Colfax St., Griffith, Indiana

VICTOR Photographic Lights

ELKAY ROTO REEL DEVELOPING TANK

FILM PACK and CUT FILM



\$3.50
Complete

With the sensational adjustable spirit loading reel for film pack and cut film negatives from 35mm. to 2½" x 3½". Tempered bakelite. Loads a dozen. (ROTO REEL fits all standard tanks, and may be bought separately at \$2.00.)

ELKAY PHOTO PRODUCTS, INC. 303 Washington Street
Newark, N. J.



PAPER SAMPLERS

To Acquaint the Photographer with Some of Gevaert's Most Popular Brands and Surfaces

The papers included in the Samplers below provide the photographer with a good variety of brands and surfaces for different print needs. We offer these items for a limited time to familiarize the photographer with these superior papers. Send check or P.O. Money Order. No C.O.D. or stamps!

- No. 1. Pictorial Projection Sampler . . . \$1.00
(20 sheets 8x10, 5 surfaces, Artona Rapid, Artex, Novabrom)
- No. 2. Professional Enlarging Sampler . \$1.00
(20 sheets 8x10, 5 surfaces, Novabrom, Artex, Novatone)
- No. 3. Paper Negatives Book and Sampler Package . . . \$1.00
(1 copy "Paper Negative" by C. W. Gibbs, A.R.P.S.; 12 sheets 8x10, 2 surfaces, Novabrom, Artex)
- No. 4. Contact Sampler . . . \$.50
(36 sheets 5x7, 6 surfaces, Artona, Novagas)
- No. 5. "Simplified H & D" by C. W. Gibbs, A.R.P.S. . . . \$.50
(An excellent treatise written in simple non-technical language. Should be on every photographer's book shelf.)

The new Gevaert Book of Formulas is sent free with each Sampler package

◀ THE GEVAERT COMPANY OF AMERICA, INC. ▶
423 WEST 35TH STREET, NEW YORK

Boston: 44 School St. Chicago: 200 E. Illinois St. Philadelphia: 1015 Chestnut St. Los Angeles: 6372 Santa Monica Blvd. San Francisco: 45 Second St.

In Canada: GEVAERT (CANADA) LIMITED
Toronto: 345 Adelaide St. W. Montreal: 417 St. Peter St.
Winnipeg: 365 Margrave St.

Prices in Canada slightly higher

Q. Does sale of a picture to a newspaper or magazine carry with it the right of copyright?

A. Generally, yes; a sale carries with it all incidents of ownership, including that of copyright. However, a photographer's rights are divisible and one publication right may be sold at a time. In such case the purchaser must be notified that one publication right only is being sold to him and that the picture also has been sold elsewhere.

The Story Behind the Picture

(Continued on page 40)

When all the work had been done according to what had been planned, the paper negative was placed in an 11" x 14" frame and a contact print made. The final paper for the contact print can be of any type—either Bromide, Chlorobromide, or Chloride. Using a paper negative, we have the full choice and range of all papers on the market. In most cases it might be best to use an enlarging paper, as the exposure through the back of the paper would be quite long on a contact printing paper. As a suggestion, may I point out that an excellent paper for the final print would be Eastman's Opal Tapestry Z.

While the picture may be a "fake" from a photographic standpoint, it is interesting to note that it has been extremely successful in exhibitions, and many copies have been requested by other photographers for decoration in their own homes.

J. GHISLAIN LOOTENS, F. R. P. S. is well known to Minicam readers for his articles as well as his work as photographer, salon judge and teacher. His class in photography at the

Brooklyn T. M. C. A. is now in its seventh year. Portraiture, retouching and paper negative processes are some of the phases for which he is especially well known.

Next month another famous photographer will tell about his most successful print with 'The Story Behind the Picture.'



Prove Spiritualism?

(Continued from page 19)

pressed a button which turned on an infra-red light, exposing this photograph. The medium's blurred feet and the direction of the folds in his clothes give a close observer the impression that he could simply have jumped into the air.

Fig. 3 was made on Armistice Day, 1924, during "The Silence," by a Mrs. Deane. Here *ectoplasm*—substance normally not "material" but temporarily given "material" qualities—has been partially built up into materializations of faces. These faces have been identified by believers in spiritualism as those of departed friends or relatives. The ingenuous photographer, however, sees in the picture the possibility of a double exposure combined with a bit of retouching.

Probably the most famous spirit in the literature of spiritualism is "Katie King," who is reported to have materialized full-size by means of tangible ectoplasm. Fig. 5 is a picture made of her by Sir William Crooks in his laboratory. According to Sir William, "Katie" walked and talked, claiming that she came to confirm "survival." She is one of the strangest of these "spirit people," since she could tolerate enough light to be photographed in the days before infra-red photography. Light is supposed to hinder phenomena and injure mediums, which possibly explains why so few photographs have been made.

Fig. 4 purports to be a visitation of Sir Oliver Lodge's son Raymond sometime after he was killed in France during the last war; while Fig. 3 was made in London at a place known to spiritualists as "Julia's Bureau." Fig. 6, which is known as the "Mary M" mediumship, was made by Dr. T. Glen Hamilton of Canada.

Today photography is considered an aid to physical research by spiritualists who see in it a means of lifting psychic phenomena from their present controversial state to one of common acceptance. Whether photographers themselves will ever accept such photographs at face value remains a matter for conjecture.

PENN'S

NEW YEAR

(AND USED) BARGAINS

Instead of making and breaking resolutions, we've broken prices as evidenced by this list of attractive bargains. All items listed are sold subject to Penn's Famous For Fairness 10-day money-back guarantee.

1940 will find Penn Camera Exchange doing business in the same old friendly way.

CAMERAS

Argus Model C9, F3.5, coupled range finder	\$ 18.95
Argus Model A27, F4.5 lens, with Exposure Meter	10.95
Univert Mercury F3.5 lens	17.95
Kodak B3, F3.5 lens	24.95
Dollina Model II, F2.9 coupled range finder	41.95
Leica Model G, F2 Summar, S. E. case	124.95
Leica Model IIIfs, F2 Summar, S. E. case (feet)	189.95
Contax I, F1.5 Sonnar, K. S. case	114.95
Kovella Reflex Model I, F3.5 Victor	32.95
Kovella Reflex Model II, F2.8 Schneider Xenar	82.50
Primarflex, F3.8 Trioplan	87.50
Rolleicord IIA, F3.5 lens	67.50
Rolleicord IA, F4.5 lens	31.75
S. B. Dolly, 2 1/4 x 2 1/4, F2.9 lens, coupled range finder	20.50
Baldanette, 1A, 120, F3.0 lens, coupled range finder	39.50
Weltur 2 1/4 x 2 1/4, F2.8 Tessar, coupled range finder	79.50
Miniature Speed Graphic, F4.5 Tessar	87.50
Miniature Speed Graphic, F3.5 Tessar	123.50
4 x 5 Speed Graphic, F4.5 Tessar	94.50
9 x 12 ICA Reflex, F2.7 Zeiss Tessar	74.50
3 1/4 x 4 1/4, RB Graphlex, Series II, F4.5	54.50
Linhof Standard, 6 x 9 CM, F3.5 Xenar	89.50
Zeiss 9 x 12 Ideal, F6.8, Goers Dagor	37.95
Rolleiflex Automat, new condition, F3.5 Tessar with case	109.50

ENLARGERS

Foth Derby, 4 x 4 C mm., F3.5 lens	\$16.95
Praxinos 2 1/4 x 2 1/4, F4.5 lens new	26.95
Simmon Omega A 35mm.	34.50
Simmon Omega B, 2 1/4 x 2 1/4 new	44.50
Elwood Studio 5 x 7	22.50
Filmarex 2 1/4 x 2 1/4, F4.5 new	34.50

USED EXPOSURE METERS

Weston Universal model 650	9.95
Weston Master model 715	17.85
Mini Photocscope	8.50
Dejur Anasco	3.50

All items listed subject to prior sale.
Trade in your old camera. Please refer to List 21.

Preserving Your Film Values

PENN CAMERA EXCHANGE

126 WEST 52nd ST. NEW YORK CITY

35 MM FILM FINE GRAIN

DEVELOPED AND ENLARGED

End your developing problems! Any 35 exposure roll of film fine grain processed and each good negative enlarged to approximately 3"x4" on single weight glossy paper for only \$1.00. Send your order in today. Simply wrap a \$1 bill around your roll of film (or send C. O. D. plus postage) and mail today. It will pay you!

MINILABS

Dept. 3A

BOX 465 MADISON SQUARE P.O. NEW YORK, N.Y.

A TIP TO VALUE-CONSCIOUS BUYERS—

This is the event careful buyers wait for—a big store-wide clearance of cameras and equipment.

Contax II 5cm Sonnar F2. E.R. Case.....	\$145.00
Contax III 5cm Sonnar F2. E.R. Case.....	169.50
Leica Standard Elmar F3.5. Reg'd.....	85.00
Leica II Summar F2. Reg'd.....	135.00
35mm Wirtgen	
F4.5 Compur.....	\$15.00
Dollina II R.F. F2.8.	
Xenar.....	35.00
Argus C-2 F3.5 R.F.....	17.50
Leica Standard	
F2. Summar.....	74.50
Kodak 35 F4.5 K.A.....	16.50
V.P. Exacta Jr.	
F4.5. Chrome.....	42.50
Ikonic A. Spec. F3.5.	
F3.5 Tessar. C.H.....	39.50
16-120 Welta Perle	
F2.8 Tessar. C.R.....	37.50
2 1/4x2 1/4 Reflecta F3.5	
Trioplan Compur.....	21.50
2 1/4x2 1/4 Autoflex.	
F2.9 Trioplan.....	49.50
2 1/4x2 1/4 Flexette.	
F4.5 Trioplan.....	29.50
2 1/4x3 1/4 R.B. Graflex	
Ser. B. F4.5 K.A.....	42.50
2 1/4x4 1/4 Graflex Ser. C	
F2.8. Cooke.....	89.50
2 1/4x3 1/4 Ultilo	
Roll Film F4.5.....	12.00

Top Dollar Allowance for Your Present Equipment in Trade. Write for Your FREE Copy of Our 1940 Camera Catalog.

ABE COHEN'S EXCHANGE
142 FULTON STREET · NEW YORK, N. Y.



Can Agencies Sell Your Pix?

(Continued from page 36)

Science Service, 2101 Constitution Ave., Washington, D. C. Science newpictures and stories. Buy outright.

The Stanley Syndicate, Room 205, 6418 Santa Monica Blvd., Los Angeles, Calif. Features, general interest photos. Buy outright.

Tager Photo Service, 109 8th St., Washington, D. C. Foreign views and photos of general interest.

Three Lions Publishers, 55 W. 42nd St., New York, N. Y. General and feature photos. Buy outright or sell on commission.

Underwood and Underwood News Photos, 420 Lexington Ave., New York, N. Y. News of National importance, general subjects. Commission basis—65% charged.

United News Service, 210 Balter Bldg., New Orleans, La. Trade-paper and rotogravure features. Sell on commission.

Universal Press Syndicate, Box 1240, Sarasota, Fla. Spot news and human interest. Buy outright.

Western Newspaper Union, 210 S. Des Plaines St., Chicago, Ill. Farm and household features for small newspapers.

Wide World Photos, 229 W. 43rd St., New York, N. Y. News and features.

My Favorite Camera and Why

(Continued from page 52)

ber one photographic conviction that the twin-lens reflex camera is the most sensible and versatile all-round box any amateur or professional "shoot-on-location" photographer can have. They manipulate fast and clean. You see a constantly bright image right up to the moment of taking and after. And that image is very comfortably larger than you can get looking through an eye-level peepsight. It means a lot when you're photographing for expression. The 6x6 cm. size is ideal, although they do tell me there is a lot of loose-jointed artistic palaver about the crudeness and lack of aesthetic grace incumbent in the square format. Somehow, though, they always trim out right on the easel or under the cropping knife, and such criticism strikes me as straining at gnats. Anyhow, it's an obvious cinch that with the 6x6 cm. you don't have to swivel your camera and strain the old crumple worrying about whether to shoot for a horizontal or a vertical picture.



MIN 4-LITE ONLY \$1

Darkroom lamp with 4 plastic safe-light discs for developing contact or enlarging papers; orthochromatic or pan film; inter-changed in a few seconds. Housing metal, finished in red crystal enamel. Uses standard 10 watt house-lighting bulb (bulb not included; 10c at any store). A practical and efficient necessity for every photographer. Sold only direct; send for yours today, only \$1.00 postpaid. Why not send him one for Christmas?

LEONARD WESTPHALEN Dept. C-1, 308 N. State Chicago, Illinois

WHY NOT?

WHY NOT SUPERFINE YOUR FILMS?

35mm films developed in a Superfine process—Eastman's new DK20—and each good frame enlarged to 3x4. Send for free mailing bag and other attractive offers—or send \$1.00 with roll of film.

SUPERFINE LABORATORIES
954 58th STREET BROOKLYN, N. Y.

QUALITY ENLARGEMENTS

PRICED WITHIN YOUR REACH

Brilliant salon quality enlargements on selected double-weight matt paper.

11x14—2 for	3 1/2x4 1/2 from	4c
8x10—4 for	35mm, etc.....	4c
5x7—6 for	4 1/2x4 1/2 from	6c
4x6—10 for	sq. negatives....	6c

From same or different negatives.

Superior fine-grain developing. 25c

Any size miniature roll

Send for free mailing bags, samples, prices.

RELOADS Any 35mm Eastman Film, Agia or Du Pont Superior **40c**

SUPER XX AND PANATOMIC—50c

NATIONAL PHOTO LABORATORIES
55 West 42 Street Dept. MA New York, N. Y.

For another thing, this size negative permits the use of honest and forthright development without resort to fancy, fine-grain liquid legerdemain. Speaking of that, it seems to me unfortunate that the 35 mm. field can't steer for the cleaner air of the straight and open road and go in for less befuddling fiddling with fine grain. The sudden onslaughts of ornate chemicals provide plenty of pedantic and impressive chitchat. Just don't forget, though, that many a good tune is played on an old fiddle, and that Granny D-76 and her ancient ilk are yet a good long haul from the grave. Meanwhile, they go on showing the youngsters a trick or two when it comes to disciplining an ornery emulsion.

The mighty miniature that started all this trending to the realms of super-super is still going strong, but I feel that the 6x6 is doing some pretty persistent infringing on once hallowed ground. Right now the impetus is smack towards 6x6, and when you've seen the new Ikoflex III, you'll have seen a mighty fine reason for it.



Story Without Words



FOTH DERBY

JUST REDUCED!

The Foth-Derby cameras are light, compact miniatures, equipped with the latest type delayed-action focal plane shutters with speeds from 1/25 to 1/500 second, large magnifying tube-sight view finders and have many other features, including focusing up to 3½ feet. You get 16 pictures, half V.P. size (1¼x1¾) on a roll of standard V.P. film.

with 2" Foth Anastigmat f/3.5.....\$19.50
with 2" Foth Anastigmat f/2.5..... 24.50

BURLEIGH BROOKS
INCORPORATED
127 WEST 42ND STREET NEW YORK

HYDE OPTICAL SLIDE RULE

\$1.50 With Leather Case



A Beautifully Engraved, Stainless Steel Rule That Tells All About Lenses, Focal Lengths, Magnifications and Measurements!

OPTICAL SLIDE RULE

which considers the focal length of the lens and aperture used, giving depth of focus obtained from these facts to any magnification of the negative desired.

FUNDAMENTAL FORMULA

how to figure anything pertaining to lenses, focal lengths, sizes of images, apertures, diaphragms.

CONVERSION TABLES

convert from Fahrenheit to centigrade, ounces to cubic centimeters, millimeters to inches, grains to grams.

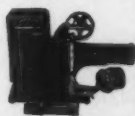
6½ Inches Long

At your dealer, or write.
Made in U. S. A.

HENRY HERBERT

483-485 Fifth Ave., N. Y. City

FOR BRIGHTER, EASIER PROJECTION



Of Film Strips and 2" x 2" Slides
Choose the SVE Tri-Purpose Projector. Illustrated is the new 150 watt Model DD which permits changing slides from the top and has many other advanced features. Write for circular "Show It Tonight". Society for Visual Education, Inc., Dept. IM, 100 E. Ohio St., Chicago, Ill.

There **IS** a difference

DON'T take photo flood lamps for granted. Not all of them are Wonderlite's! No other make offers you the wide assortment found in the Wonderlite Series—nor the long life which makes Wonderlite Lamps most economical to use.

SEND FOR THE
WONDERLITE Price List

Wide awake dealers have Wonderlite Lamps in stock. Others CAN procure them for you.

WONDERLITE COMPANY
14-M Northfield Avenue, West Orange, N. J.

35^{MM} FILM

DEVELOPED **ULTRA** fine grain.
and Each good frame to
ENLARGED $3\frac{1}{2} \times 5$ on Kodabrom-

FREE 8x10 Enlargement with
\$2.00 order.

WALTER LABORATORIES
90 Fountain Ave., Brooklyn, N. Y.

\$1
Cash
or
C. O. D.
plus
Postage

An Amazing Camera Value
WIRGIN f6.3

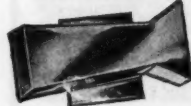
Limited number. All brand new.
Built-in exposure meter; two
finders (eye level and optical);
takes 8 pictures on No. 120 roll;
shutter speeds:
1/25th to 1/100th
incl. T. and B.
Tripod sockets.
Rush your order
in today.

\$10



CAMERA DEPT., New York Loan Office
118 N. Liberty Street Baltimore, Md.

THE SAYMON-BROWN



**Direct Reading
EXPOSURE
METER**

THE first accurate direct reading exposure meter of the visual or extinction type that has no moving parts or separate charts. Lens openings and shutter speeds are read off directly, instantly. This handy, dependable instrument may be attached to camera or held in hand. Adjustable to conform with the individual's eyesight. Beautifully finished in chrome, with leather case, only **\$1.85**. Shoe for attaching to camera, if desired, 25c additional. Made in the U. S. A. and sold by leading dealers everywhere.

Distributed nationally by—

BURLEIGH BROOKS, INCORPORATED
127 WEST 42ND STREET NEW YORK CITY

**Photography
TRADE NEWS**

New Omega Enlarger

Two new Omega enlargers, with accessories to be put on the market, will be "all purpose" machines. The accessories are a copying attachment, a Kodachrome film holder, a reducing attachment, attachment for horizontal projection, tilting easel, and attachment for three-color work.

Focusing is accomplished, not by moving the lens but by a revolutionary design in which the negative is moved. A ventilating system, "Dyna Thermal Ventilation," provides cool operation.

The illuminating source is an 110 volt, 75 watt, Mazda photo enlarging lamp No. 211, for AC or DC.

The Super Omega B takes negatives $2\frac{1}{4} \times 2\frac{1}{4}$, and smaller, and features an adjustable negative carrier set between the upper and lower bellows, permitting the use of a 2-inch or 3-inch lens with a single set of double condensers. The carrier may be rotated in any direction to effect complete distortion correction. The Omega C2 takes negatives from $3\frac{1}{4} \times 3\frac{1}{4}$ inches and smaller. Price of either model without lens is \$77.50.



Super-N-Larger Lamps

Wabash Super-N-Larger Lamps are the new special white bulbs that are scientifically treated, inside the bulb, to diffuse and distribute the light evenly and uniformly over the entire bulb surface. The smooth

glass bulb will not discolor, accumulate dirt, nor scratch. Trade mark and number are etched on the neck of every bulb.



This inside-the-bulb treatment is claimed to break up the raw filament light that is distributed evenly and uniformly over the entire bulb surface in a brilliant, white glow with less absorption of light and less heat. Five different sizes, with burning lives from 100 to 300 hours, are now being made.

ment light rays into soft, diffused light that is distributed evenly and uniformly over the entire bulb surface in a brilliant, white glow with less absorption of light and less heat. Five different sizes, with burning lives from 100 to 300 hours, are now being made.

Toners

Mansfield Photo Research Laboratories, 701 South LaSalle Street, Chicago, are offering their Single Solution Color Toners in kit form (\$1.95). The new kit package contains blue, brown, green, and magenta colors. No dark room is required to use these tones. A print is submerged in the diluted toning solution where the toning action may be watched. When the desired color is secured, the print is washed to clear the highlights.

Amateurs who would like to experiment with toning can secure a sample by writing Mansfield direct, enclosing ten cents to cover cost of packaging, mailing, etc. Samples of all four colors may be had for 35c.

Fluorescent Light Unit

The Bardwell & McAlister Fluorescent lamp (\$102.50, complete with counter-balanced stand, less globe) consists of eight 24" - 1 1/2", 20-watt fluorescent tubes, in a metal housing, 25 1/2" square, 4" deep. The auxiliary units are of the new type, mounted within the unit with the starters in a conveniently located position.



The unit, being self-contained, permits the lamp to be removed from the stand and used anywhere without additional wiring—as would be the case where the auxiliaries are a separate part of the unit.

The housing is mounted in a yoke of steel tubing, allowing the unit to be tilted to any angle, and a hand wheel locks it in any position.

The stand is constructed of heavy-duty steel tubing with spring balances—balanced to the weight of the unit. The counter-balance is so constructed that it permits the lamp to be raised or lowered by the release of a lever, which holds it at any height desired.

The stand has a height-range of from five to nine feet. A low arm adapter is also available which permits the lamp to be operated from two to five feet. Three-inch casters permit the stand to be easily moved without the danger of tipping—even at full height. The head weighs approximately 25 pounds—the stand, 15 pounds.

Source: Bardwell & McAlister, Inc., 7636 Santa Monica Blvd., Hollywood, Calif.

Kemp Catalogue

A catalog of Kemp Photographic Accessories includes the latest additions to the Kemp line—the Kemp Print Washer and Devel-O-Therm.

The Kemp Print Washer (\$1.50) converts any sink, wash bowl, or basin into a print or negative tank.

Devel-O-Therm (\$3.50) is a thermometer for photographic use, marked with calibrations from 10 to 120 degrees, prominently indexed at the 65 degree mark.

A booklet of seven sample prints, showing the effects obtained through the use of Jack Powell Etching Screens (a Kemp product) will be on dealers' counters to help customers in the selection of matrices suitable for their purposes.

Source: Kemp Camera Supply Co., 923 Cole Ave., Hollywood, Calif.

Waterproof Paint

Willo-Black is a black, elastic coating for trays, tanks, sinks, etc., that will not crack nor blister. It is recommended for waterproofing new materials, and can be used as a surface preservative for almost any material. Dries within two hours. Source: Willoughbys, 110 West 32 Street, New York City.

Am. Standards Assn.

The American Standards Association has organized seven subcommittees to develop a broad program for national and international standards for photographic equipment.

The four main objectives are: To develop a system of nomenclature and terminology which will eliminate the present confusion caused by the use of the same words and phrases with different meanings; to agree on dimensional standards to bring about better interchangeability; to agree on uniform methods of expressing characteristics of sensitive materials; and to define tests and methods of measurement which at present are not well known or not uniformly used.

Tankometer

Raygram Corporation announces a thermometer (\$1.00) specially designed for use with spiral reel tanks. The lower end is notched so that it will engage the reel and thus serve as a rotating rod. The thermometer is encased in a plastic housing for protection against breakage.

**Outstanding
PERFORMANCE
—
Extraordinary
VALUE!**

FEDERAL

**MODEL
No. 120**

PHOTO ENLARGER



For all size Negatives up to
2 1/4 x 3 1/4 inches
(Equivalent section
larger negatives)

CALIBRATED EASEL 16x
18" **BASEBOARD WITH
HINGED TYPE BORDER-
MAKER AND PAPER
HOLDER ATTACHED.** En-
largements 2 1/2 to 7 times on
baseboard-Book-type negative
carrier. Double diffusing
plates supply evenly dis-
tributed intensified light. Built
in diaphragm with red filter.
125 watt projector lamp in-
cluded.

Entirely Made
in U. S. A.

Complete with
Anastigmat
F8.3 LENS

\$17.95

\$1.00 Higher W. of Miss.

ASK YOUR DEALER

Descriptive folder
on Request

**Federal Stamping
& Engineering
Corp.,**

24 Lafayette St.
Brooklyn,
N. Y.

**AMERICA'S FASTEST
SELLING ENLARGERS**

**QUICK
SHIPMENTS**

35 MM FILM

**PROMPT
SERVICE**

25 Ft. Agfa Ultra Speed.....	\$1.00
25 Ft. Agfa Supreme.....	1.00
25 Ft. Eastman Film X.....	1.00
25 Ft. Dupont Superior.....	1.00
25 Ft. Eastman Panatomic X.....	1.00
Daylight Film Winder (was \$10).....	2.95

Postpaid in USA if Cash with Order.
ASK FOR FREE BULLETIN No. 7

Greensburg Photo Supply Co.

No. 7 Fisher Bldg.,

Greensburg, Pa.

**35MM FILM Fine Grain
DEVELOPED & ENLARGED**

\$1-

Any 36-exposure roll of film fine-grain processed and each good negative enlarged to approximately 3"x4" on single weight glossy paper for only \$1. On double weight mat paper, \$1.50. For your convenience, you may wrap a dollar bill around your roll of film or request it sent C.O.D. Mail today. Film booklet free! Here is a book that will help you make better pictures. Send in your request with your order, or mail a postcard.

Gratifying Service Since 1920

RAY'S PHOTO SERVICE

701 Ray Bldg., LaCrosse, Wisconsin



Haynes
GRAY-SCALER

● A gray scale shows you how to obtain the utmost in range and tonal effects from any enlarging paper. Here's how to make gray scales easily, quickly, with laboratory precision.

75c with instructions and 20-page manual on the HAYNES SYSTEM OF PRINT CONTROL, with sample gray scales.

FREE! Send for instruction booklets.

HAYNES PRODUCTS
136 Liberty St., Dept. M-1, New York, N. Y.



FREE!
Send for this
PHOTO ENLARGER

for a two weeks' free trial in your own home. See how easily it makes beautiful ENLARGEMENTS; how it COPIES pictures; how it REDUCES and RETOUCHES. See its MONEY-MAKING possibilities. Price only \$9.85, complete with FIVE different focal length lenses, 1 f 6.3 ANASTIGMAT. Takes all size negatives up to 4x5 inches. FREE CIRCULAR.

GRAPHOMAT CORP., 152 W. 23rd St., N. Y.

35MM FINE GRAIN FILM
DEVELOPED AND ENLARGED
\$1-

Wrap a dollar bill around any 36-exposure roll of film and send it to us for a particularly good job of fine grain processing, with each good negative enlarged by craftsmen to approximately 3x4. Send an extra 50¢ (coin) for double-weight mat paper. 35mm. Developed and contact strip prints 18 size. 40¢; 36. 60¢ (see before enlarged). There's 40 years of satisfaction behind Moon-Tone Service.

MOON PHOTO SERVICE, 100 Moon Bldg., La Crosse, Wis.

16 Exp. CANDID FILMS
DEVELOPED AND ENLARGED
ONLY 50c

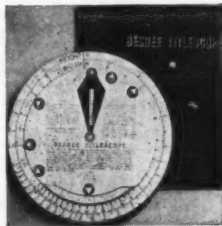
Your 16 exp. rolls ("split" 120 or 137) fine-grain developed and enlarged to 3x4, only 50c. "Split" 120 film (12 exp.) enlarged to 4x4, only 75c. Bantams, or other cameras, using No. 828 film (8 exp.) 40c for 8 beautiful 3x4 enlargements. Order from this ad TODAY or write for FREE print and FREE folder giving secrets of shooting better pictures. IN TODAY-TOMORROW SERVICE on ALL ORDERS!

SUPERLABS, Box 27-M, ELROY, WIS.

Besbee Titlescope

The Besbee Titlescope, a compact, pocket size dial, gives necessary information for shooting titles and close-up objects. Factors which the instrument shows include:

Exact height and width of the included field at any closeup distance, using the 15mm., 20mm., one, two, three and four inch lenses for 16mm. cameras; for 12.5 or 25mm. lenses with 8 mm. cameras; exact distance at which to place any object so that it will fill up the included field of the lens; exposure on various types of film—color and monochrome—when using two flood type bulbs for standard title illumination; distance at which to place bulbs for even lighting of the surface with various sizes of title cards; and a handy conversion table to read from inches-feet to millimeters-centimeters. Manufactured by the Besbee Products Corp., Trenton, New Jersey.



Automatic Timing Device

The G-E Totalux is an instrument developed by the General Electric Co. to measure accurately photographic time exposures from one to twenty minutes. In case where light-intensity fluctuates, such as when carbon arcs are used as light sources, the G-E Totalux automatically increases or decreases the exposure time according to the light variations occurring.

This instrument consists of a light-sensitive element which is placed to receive light from the source being used to make the photographic exposure. The adjusting dial is calibrated in 100 divisions. Once the number of divisions corresponding to the exposure time has been determined, the dial is set to this number, and the light turned on. When the dial reaches the zero position, either the light is turned off, or an alarm sounded, thus obtaining an exposure proportional to time and light intensity.

The Totalux is designed for 115 volts and 50-60 cycles, but can also be adapted to other frequencies and voltages. It weighs about 16 pounds, and measures about 8x10x7 inches.

Bee Bee Negative Files

The Fillette (\$1) is a new container for filing and indexing negatives.

The regular Bee Bee Negative File (\$2) is a partitioned, leatherette covered upright box with hinged cover, containing 100 transparent glassine envelopes accommodating from 200 to 900 negatives, depending on film size. A ruled numerical index, allowing room for descriptive data, is provided. This regular Bee Bee Negative File is made in three sizes: No. 1 for single and double 35 mm. frames; No. 2 for Vest Pocket, 4x4 cm., and 3x4 cm. negatives, and No. 3 for 2 1/4x3 1/4, 2 1/4x2 1/4, or 1 3/4x2 1/4 negatives.

The new Fillette is provided with a similar index and the same number of envelopes, accommodating the same film sizes, but is boxed in a hinged container instead of the deluxe case that distinguishes the Bee Bee Negative File.

Both of these products are made in America and distributed exclusively by Burleigh Brooks, Inc., 127 West 42nd Street, New York City (West Coast branch 1010% South Olive Street, Los Angeles).

Thalhammer Tripod and Head

A new Deluxe Thalhammer tripod and head (\$30), designed for professionals and amateurs, incorporate instant-on camera plug, large panning base calibrated to full 360°, positive locking clamps, surefoot points, and rigid construction. It is made in two sections, and extends to 60". Weight 6 1/4 pounds.

See your dealer, or write for new descriptive folder covering entire line, from Thalhammer Co., 1015 West Second Street, Los Angeles, Calif.

Print Trimmer

The new Fabco Trimmer features an automatic head clamp which prevents prints from creeping while being

trimmed. This is a rubber edged clamp, attached to the scale at the head of the board, which passes firmly onto the paper with each down stroke of the blade.

The knife blade of the Fabco Trimmer remains in any position, eliminating danger of accidental injuries and spoiled work. Other features of the Fabco Trimmer include a blade stop, so fixed that the cut is arrested just before the end of the stroke. This eliminates oversize sheets from being torn, making it possible to trim them perfectly in two or more cuts.

The table of the Fabco Trimmer is of high quality linoleum, ruled with white lines. The base is five-ply laminated fir with non-marring rubber feet. Manufactured by Fabco Products Co., 675 North Kenmore Avenue, Los Angeles, Calif.

Lafayette Spot

The new Lafayette "Hi-Lite" spot (\$15.89, complete with lamp) has a Fresnel lens of heat-resisting Pyrex, and the case is of unbreakable die-cast aluminum.

Mounting is of the universal yoke type, adjustable in all directions, and focusing is accomplished by means of a dial which permits adjustment of the beam from a sharply defined spot to diffused flood-lighting.

The bulb employed is a pre-focus bulb which operates at 3200 degrees Kelvin as recommended for color photography, and which maintains constant illumination throughout its rated life.

Illumination obtained is the equivalent of that provided by the conventional 500-watt spot. A 96-inch telescoping stand is available, or any standard lighting stand may be employed.

Weight: 5½ pounds, without stand. Dimensions: 3-3/16" long, 4-3/4" high and 3-3/4" wide.

Source: Lafayette Camera Division, Radio Wire Television Inc., 100 Sixth Ave., New York City.

Unipod

The Albert Specialty "Unipod" is a new one-legged support for small movie or still cameras.

Collapsed, the Unipod looks like an ordinary walking stick. In use, the handle is removed, the camera threaded to the tripod head at the top, and the length extended to eye level. A lock holds the Unipod securely at any desired height from 33 to 59 inches.

Source: Albert Specialty Co., 231 So. Green St., Chicago, Ill.

Range Finder

De Jur-Amsco Corporation announces a new range finder designed to fit all cameras, utilizing the superimposition image principle. The DeJur Range Finder (\$5.50) has an extending viewing eyepiece which permits rapid centering and reading of images.

The focusing of the lens finder is achieved by a micrometer, ball-bearing adjuster revolving in a bronze bearing. Its uniform dial markings permit faster readings.

Public Address System

A Tri-Purpose Public Address System, by the Ampro Corp., 2839 North Western Ave., Chicago, operates with microphones and phonograph, and can also be used as an auxiliary amplifier with Ampro's classroom model projectors for auditorium use.

The volume obtainable is more than sufficient for large auditoriums and stadiums seating up to 10,000 and over.

This equipment is ideal for schools, colleges, churches, auditoriums, clubs, hotels, athletic fields and parks—wherever sound amplification with or without motion pictures is desired. Write for special bulletin, giving all technical data, full description and prices.

4 MINUTES! 40 PRINTS!



AMATEUR-PROFESSIONAL MODEL

\$19.95 28" x 24" Chromium Surface
For Glossy and Matte Prints



As efficient as it is speedy, and it's just as easy to use. Put matte or squeeze glossy prints onto the drum, and turn the handle. Will dry forty 3"x5" or four 11"x14" prints in from 4 to 8 minutes. Can't burn or scorch. Pre-shrunk drying belt. 6-year guaranteed element. Uses 230 watts, 115 volts.

12"x28" Amateur Model, \$9.95 Complete
At your dealer's, or write to Dept. R

Made in U. S. A.

DISTRIBUTORS: Eastern—Elkay Photo Products, Inc., Newark, N. J.—West Coast, Craig Movie Supply Co., Los Angeles, Calif. Midwest Dealers write to

WARREN
ELECTRIC APPLIANCE CO.
WARREN, PA.

You'll Do Better With

CHAMPLIN **16** **FORMULA**
FINE GRAIN DEVELOPER
CHEMICAL SUPPLY CO.
HOLLYWOOD, CALIFORNIA

35MM **FILMS DEVELOPED & ENLARGED \$1**

8x10 Enlargements, 3 for \$1.00
5x7 Enlargements, 4 for \$1.00
Plus 15c for postage.

TO 2½ x 3½ PRINTS
If you want the best at a popular price—give us a try! 36 perfectly enlarged prints, individually exposed. Returned immediately postpaid for \$1. Write for price list, mailing tags. Clark Laboratories, 8022-A Sain Ave. Fr. Sta., Wash., D. C.

Use BULK 35 mm FILM. Write for bulletin describing DAYLIGHT Cartridge Loaders.

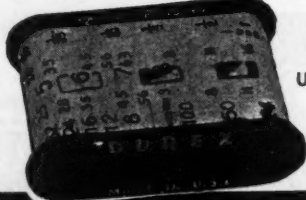
W. W. BOES CO.

120 W. 2nd St.

Dayton, Oh.

For Perfect Pictures Every Time!

FOR
BOTH
CINE
and
STILL



Made
IN
U. S. A.

DUREX EXPOSURE METER

Tested under all lighting conditions and approved by leading film laboratory. Simple to operate. Weston Calibrations for both Cine and Still Exposures 10 sec. to 1/1000th. F1.8 to F16.2. Cine frequencies 8 to 120 frames per sec. Compact, light, durable.

Priced complete with modernistic case.....\$2.35

If your Dealer cannot supply you we will ship direct, postpaid. Send for descriptive literature.

DUREX MFG. CORP., 17 W. 3rd St., New York City

Foreign Department: 145 W. 45th St., N. Y. C.

35mm FILM
FINE GRAIN DEVELOPED
AND VAPORATE TREATED
For your future protection

25¢

DEVELOPING - VAPORATE &
PRINTS IN CONTINUOUS STRIP
18 Exp. Roll 40c • 36 Exp. Roll 50c
DEVELOPING - VAPORATE AND
3 1/4" x 4 1/4" GLOSSY ENLARGEMENTS
18 Exp. Roll 75c • 36 Exp. Roll 1.00

Single Frame - Memo - Unives film enlarged to 2" x 3"

DEVELOPIX
Please Remit With Order To Save C.O.D. Charges
Flamson Bldg. New York N.Y.

35MM. CAMERA USERS

"LOAD YOUR OWN"

Guaranteed Negative — Prompt Service

Eastman **25 ft. \$1.00** Eastman
SUPER X for **PANATOMIC X**

Eastman **Postpaid in Dupont**
PLUS X **100 ft. for \$3.75** **SUPERIOR**
Eastman **Agfa**
SUPER XX **SUPER SPEED**

CAMERA EQUIPMENT COMPANY

1600 Broadway, New York City, N. Y.

KODAK OWNERS

Your present Kodak or Reomar—or new Monitor or Vigilant—can be easily synchronized to make Speed Flash pictures, with a Kalart Micromatic. Write for FREE Speed Flash Manual. The Kalart Company, Inc., Dept. M1, 915 Broadway, New York, or Taft Bldg., Hollywood, Calif.

"Invasion" Developer

In the Vitol Invasion Process of negative developing, the first step is the thorough penetration, invasion, and saturation of the emulsion by the developer. This, known as the "Invasion Period" of development, takes but four or five minutes. Then the film is removed from the developer, and the excess solution rinsed from the surface, leaving only active Vitol developer encased in the emulsion itself.

After rinsing, the film is permitted to remain in the developing tank in complete darkness and in cool, still air for not less than 25 minutes. A longer period is decidedly beneficial, producing increased shadow detail. A maximum developing time of twenty-four hours is permissible.

During this time, development takes place in air—to the point of correct density. The action of the developer encased in the emulsion produces a physical deposition of metallic silver particles and of soluble bromides. These bromides, confined in the emulsion, by their restraining action prevent over-development and blocking of highlights. In the areas of lesser exposure, where less bromide is formed, the developer is more active, and the under-exposed areas are completely developed, producing detail to infinity in the deep shadows or under-exposed areas.

The new negative developer is to be made by Photo Chemical Foundation, Hollywood, Calif.

Light Stand

The Lafayette light stand, which accommodates standard studio lamps, is available in two models. The 3-section model extends to a maximum of 72 inches



and folds to 27 inches; the 4-section model provides maximum height of 96 inches and is 28 1/2 inches long when folded. In each case the base is of the tripod type, with spread adjustable up to 32 inches. The base and telescoping tubular upright are of steel with brass fittings.

The Lafayette crossarm (not included with the stand) mounts on either of the above models, or on any standard light stand. It is 24 inches long and is designed to accommodate any type of clamp-on reflector or lamp. Available for stands with 1/2-inch terminals, or 3/8-inch mounts.

Source: Lafayette Camera Division of Radio Wire Television, Inc., 100 Sixth Ave., New York City.

Custom Finishing Service

A new Custom Finishing Service is being established to provide individual, expert attention to amateur developing and printing orders. Printing techniques will be varied as required for getting the best results from each negative.

This new service should be specifically requested when it is desired. Prices will be somewhat higher than for standard finishing.

Source: Central Camera Company, 230 South Wabash Ave., Chicago, Ill.

Tru-Lite Tripod

The Tru-Lite Precision Tripod (\$22.50 complete), of all-aluminum construction, features a new method of attaching a camera to the tripod. The panorama head allows 360° revolution, with tilting of camera at any angle.

Tru-Lite lens shades, filter holders, and filters (made of genuine dyed-in-the-mass optical glass) are priced at \$1 each, up to 43 mm.

Source: Tru-Lite Research Laboratories, Indianapolis, Ind.

Thalmetal Tripod

The new Thalmetal tripod (\$14) is designed for 8 mm. movie cameras. Upper sections are of polished aluminum channel, and lower sections of black hardwood. The purpose of this metal-wood combination is to retain the flexibility and lightness of wood, and the beauty, durability and compactness of metal.

This model incorporates all of the exclusive Thhammer features—Surefoot Points, Rigidized Construction, Instant-on Camera Plug, and large panning base.

A new feature is the leg screw arrangement that keeps the legs at proper tension at all times.
Source: Thalhammer Co., 1015 West 2nd St., Los Angeles, California.

Nikor Print Washer

The new Nikor Print Washer washes prints and negatives between the leaves of a vertical "book" made of specially processed absorbent fabric. Prints cannot touch each other and are fully protected from damage by the filtering action of the cloth which assures clean water.

When in use, the Nikor Print Washer takes up only about one third as much space as a tray, and when not in use, folds flat to be put away on a shelf or in a drawer. It is claimed to use less water than common methods.

Two sizes are available: 8 x 10" and 11 x 14". The 8 x 10" size (\$4.75) accommodates fifteen 8 x 10" prints of the equivalent area of smaller prints. The 11 x 14" size (\$7.75) will take fifteen 11 x 14" prints, or thirty 8 x 10" prints, one hundred and twenty 4 x 5" prints, etc.

Source: Burleigh Brooks, Inc., 127 West 42 Street, New York City.

Projector

Ampro's new 8 mm. Projector Model A-8 (\$98. complete) includes the following features:

Automatic pilot light to facilitate threading and operating in dark room.



Accessibility to all parts, facilitating cleaning.

Cooled lamp house, to insure long film life.

Automatic reel locking device; takes all 8 mm. reels.

Still picture lever, to permit viewing any single scene indefinitely. (Automatic safety shutter insures cool film temperature at all times.)

Fast automatic rewind—no transferring of reel or belts required.

Film movement can be reversed without stopping projector.

Tilting control knob for centering picture on screen.

Standard prefocused base 500 watt lamp.

Will accommodate 400 foot 8 mm. reel if desired. Complete range of film speeds controlled by rheostat. Condenser lens—heat resistant.

Color projection—optical system corrected to insure ideal projection of colored film.

Standard accessory 10 foot line cord, 1-200 ft. reel, bottle of Amproil, oil can, 1" f/1.6 objective lens, instruction book, cleaning brush, and carrying case included. Operates on AC or DC, 100-125 volts.

Interchangeability of lenses. Standard 1" lens can be replaced by either 3/4", 1", or 1 1/4" focal length standard lenses.

Automatic fire shutter automatically protects film against burning when film stops for any reason.

Darkroom Lamp and Filter Outfit

Agfa Ansco Corporation announces the addition of a new Darkroom Lamp and Filter Outfit (\$1.95) to its line of photographic equipment items. The new outfit includes an Agfa 3 1/4 x 4 1/4 inch Safelight Lamp housing and socket, one A3 Green Filter, one A6 Yellow-Green Filter and one A7 Red Filter. The filters, which are all 3 1/4 x 4 1/4 inches in size, are designed to provide maximum visibility with complete safety when correctly used and fitted with a standard 10-watt frosted Mazda lamp. The Safelight provides proper darkroom illumination for panchromatic films with the A3 filter, orthochromatic films with the A7 filter, and chloride, chloro-bromide or bromide papers with the A6 filter.

Filter Booklet

The Chess-United Company is now working on a new Omag filter leaflet which will contain up to date filter information and filter factors for new films.

BEFORE YOU BUY THAT CAMERA

Investigate
THE FOTOSHOP
Almanac Catalog
LEARN HOW YOU BENEFIT
by FOTOSHOP'S
"SERVICE PLUS" PLAN

• 174 pages, brilliantly illustrating every worthwhile photographic product



• Tells how to benefit by Fotoshop's Service Plus Plan

• Almanac section contains selection of timely, authentic articles on current photographic subjects with examples, tables and formulas.

Send for this Almanac Catalog today!

If you like it, send us 25c (for postage and handling), which is credited on your first order for \$3 or more. If not, return it. We guarantee postage.

FOTOSHOP INC.

18 EAST 42nd STREET

JUST OFF 5TH AVE.

BRANCH: 136 W. 32nd STREET

2 GREAT STORES

IN THE HEART OF NEW YORK

Irish to Dept. A3.



New STEREO-TACH
MAKES
3rd DIMENSION
SNAPSHOTS
WITH YOUR OWN CAMERA.

New camera thrills for you! Amazing new STEREO-TACH slide in front of lens of YOUR camera and takes third-dimension pictures with DEPTH and PERSPECTIVE! It's easy! Single click of shutter takes TWO pictures, from different angles, on ONE film. Develop, print, view in usual way. No special skill needed. Focusing, lighting, taking as usual. But what a difference when you see prints through Viewer! Subjects stand right out from background as in REAL LIFE—as different from ordinary flat prints as day is from night! Pictures can be projected.

Only
\$11.75
COMPLETE

Price West of the Rockies slightly higher

10 DAYS TRIAL Complete outfit consists of amazing STEREO-TACH Viewer, sample prints, specialties for viewing projected pictures, and simple instructions. See your dealer at once or rush your order direct to manufacturer. Send check or money order and we ship prepaid. FULLY GUARANTEED.

ADVERTISING DISPLAYS, Inc.

Dept. A-310, 12th and Bankish Streets
ROVINGTON, KY.
Illustration Booklet FREE

ROLYN DARK-ROOM LAMP

with the sensational new

ROLYN SAFELITES



Just out. Available in red, orange and yellow. Interchangeable in 5 sec. Made entirely of quality plastic. Practically indestructible. 4 1/2" diameter. Gives you a beautiful, safe, translucent light directed where you want it. A most unusual value. At your dealer or order direct. **\$1.75** State color. Postpaid, only.....

Roly

Robert M. Lynn
952 So. Grand Ave., Dept. M-1
LOS ANGELES, CALIFORNIA

MADE IN
U. S. A.

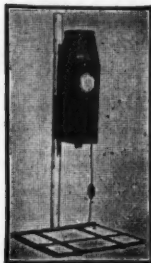


PHOTO ENLARGER \$5.94

including an f5 LENS. Takes all size negatives up to 4x5 inches. ENLARGES COPIES and REDUCES automatically. Does perfect work. Also with an f6.3, 3 1/4 inch f/1. ANASTIGMAT LENS for only \$7.94. Money back guarantee. Interesting circular FREE.

IDEAL-M

152 West 23rd Street, New York

AFTER-CHRISTMAS SPECIALS

Automatic Rolleiflex, Zeiss Tessar F3.5, overready case	\$107.50
Rolleicord II, Triotar F3.5	\$7.50
Contax III, Tessar F1.5, overready case	\$69.50
Super Ikonta B, latest model, 2 Tessar F2.8	\$102.50
Speed Graphic 3 1/4 x 4 1/4, CZ Tessar F4.5, range-finder and flash	\$117.50
Leica IIb brand new, with Lita New Summar F2.	\$127.50
Brand New Omega B, 3 1/4 x 2 1/4, F4.5 Lens	\$49.50

10-Day Guarantee on All Merchandise.
TOWER PHOTO SHOP 24 W. 43rd St., New York City

WE WILL
DEVELOP
ENLARGE
AND
RELOAD

Your 35MM Roll for Only
Developed ULTRA FINE plus
complete set of giant
enlargements printed by
ELECTRIC EYE METHOD on
Velour Black, plus your
cartridge refilled with 36
exp. front Plus X film and
returned in TEN hours.

PHOTO RESEARCH M-1
Blackstone, Massachusetts

Write
For Samples,
Mailers, Coupons

FREE—Send today and we
will include two 5x7 per-
mitone enlargements.

THE
Pierce
EXPOSURE METER

Newest optical type meter . . . Appears, is held and operated exactly like expensive photo-electric meters . . . Operation quick and simple . . . Meter is entirely pre-settable. Complete with neck cord, instructions, in attractive box. Comes in 2 models for motion picture cameras and for still, each at . . . **\$1.85**

Send for literature M-11. At all leading dealers.

RAYGRAM CORP.
FOURTH AVE. NEW YORK CITY

Flash Synchronizer

The Goodspeed flash synchronizer (\$13.50) weighs less than 13 ounces, measures 6 inches in diameter and 1 1/4 inches in depth—small enough to be carried in an overcoat pocket.

More than a foot of conductor wire is provided from the synchronizer head to the battery case, making the unit adjustable to any camera. Attaches to a camera as easily as a cable release. The synchronizer head weighs only 3/4 ounces, eliminating unusual strain or wear on the shutter.

The parabolic reflector is of polished aluminum, and an adjustable socket permits centering any size flash bulb, insuring maximum efficiency. The socket is of spring design for quick insertion of bulb, and is provided with a handy bulb ejector.

There is no battery case. The 6-inch reflector unit contains six standard batteries which are economical and obtainable everywhere. The universal connector, at the bottom of the adjustable socket, attaches to standard tripod sockets and accessory "shoes."

Source: Goodspeed, Inc., 220 Fifth Ave., New York City.

Vaporating Service

To eliminate scratches and fingerprints due to handling of negatives after they leave the laboratory and are in the hands of the owner, Developix are now treating each 35 mm. film they develop with the Vap-O-rate process. at no extra charge.

The Vap-O-rate treatment chemically replaces the water content of the cell structure of the film, making it tougher and more pliable. The surface of the film becomes impervious to abrasion marks from ordinary handling and fingerprints are easily wiped away without the acids in perspiration eating their way into the gelatin of the film emulsion.

Mailing bags and price-lists may be had by writing Developix, Flatiron Bldg., New York City.

Speedgun for Flash Pictures

The new Agfa Memo Speedgun (\$14.50) is especially designed and fitted for use with the Memo camera. The Memo Speedgun provides accurate synchronization of flashbulb exposures at all camera speeds and with all types of flash lamps. Provision is made for extension wiring to additional flash lamps, for a safety catch to prevent accidental exposures and for adjustment of both reflector position and synchronizing control for different sizes and makes of flash lamps.

New Catalog

Don Elder, 739 Boylston St., Boston, Mass., announces a new catalog of moving picture cameras, projectors and accessories which should be of special interest to cinematographers.



"Do I get that new dress or do I open the door?"

Argoflex

This month International Research Corp. is announcing its newest model—the Argoflex (\$32.50). A twin lens, focusing reflex, making $2\frac{1}{2} \times 2\frac{1}{4}$ -inch pictures, the Argoflex is equipped with an anastigmat 75 mm., f/4.5 taking lens and a focusing lens of f/3.5. The camera makes 12 pictures on B2 or 120 film.

New Pocket Size Flashgun

Mini-Flash (\$12.50) is a new flashgun, made in only one model and one size—which may be used on any camera, from the smallest miniature to the larger plate and film-pack cameras. Brackets and shutter releases of different lengths are provided, to conform with the type of camera to be used.

Its reflector (of the aplanatic type) is made in eight sections which fold together, fan-like, when the flashgun is not being used. "Fountain-pen" type flashlight batteries are used instead of regular flashlight batteries. These cost five cents to replace, last about six months, and will fire more than 450 bulbs.

An important feature of this flashgun is the open style bulb clip which permits the photographer to grip the base of the bulb and remove it immediately after it has been fired, without danger of being burned. An auxiliary socket will be available for use with the new miniature flash bulbs (13,000 to 15,000 lumens) announced recently by G. E.

Manufacturer and distributor in the East is Berman-Meyers, Inc., 90 West St., New York City.

Three New Enlargers

Three new enlargers added to the Sun Ray line are: The Mastercraft (\$32.50 without lens), a $2\frac{1}{4} \times 3\frac{1}{4}$ -inch enlarger. Has geared trolley focusing unit. With $3\frac{1}{2}$ " f/6.3 Ilex lens, Iris diaphragm, \$37.50; with $3\frac{1}{2}$ " f/4.5 Wollensak lens, Iris diaphragm, \$42.50.

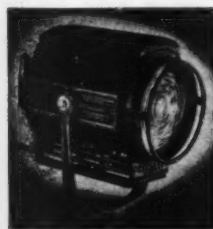
The Grant S. Enlarger and Projector (\$42.50 without lens) has two condensers, focusing on geared trolley unit, revolving head for horizontal or vertical negatives, built-in red light filter, and can be used on a/c or d/c current.

The Arnold Model A (\$65 without lens) extends up to 4 feet in height for big enlargements, can use interchangeable lenses, has two $4\frac{1}{2}$ " removable condensers, No. 211 optical enlarging bulb, red filter, and special three trolley focusing mount. Heavy baseboard, 20×26 ".

Made by the Sun Ray Photo Co., 295 Lafayette, New York City.

Britelite Spotlights

Improvements in the Britelite No. 535 Spotlights are announced by Motion Picture Screen and Accessories Co., Inc., 351 West 52nd St., New York City. These spot-



lights now have radiant convector cooling, affording the lowest surface temperature. The solid, Duraskel construction is based on the box-girder principle. The No. 535 has a square shoulder helix for absolute focusing. . . it is rapid, positive, smooth-working and wear-resistant.

Another advantage is the universally adjustable reflector. The lamp carriage and the reflector mount are machined of milled duraluminum stock for greatest wear, accuracy and flexibility.

The wiring inside housing is of hard-finished asbestos, giving absolute protection against lamp heat and flexibility.

Britelite No. 535 Spotlights are suitable for natural color work, having no color fringe nor distortion. They have a range as follows: Narrow beam, 12 inches at 10 feet; wide beam, 10 feet at 10 feet.

Frame Your Picture

A "cord" type Bragette (\$1.00) which will frame any picture from one inch to a photo mural 36 inches high, is now being manufactured by Bragette, 225 Fifth Avenue, New York. These Bragettes are available in four Lumilite colors: the standard polished aluminum, jet black, red, and gold finish—at all photographic stores.



Bee Bee ILLUMINATED VIEWER

for
Mounted Color
Slides and
35 mm. Film

Made in U. S. A.

THIS recent addition to the Brooks line gives an amazingly realistic "third dimension" or stereo-effect. It brings out all the rich natural colors in transparencies and its precisely ground lens makes 35mm. frames appear to be enlarged to approximately $2\frac{1}{2} \times 3\frac{1}{2}$ inches. The entire frame is cast aluminum, in one piece. There is nothing fragile or delicate about it, though it weighs only about 2 pounds. A 6-foot cord with a handy snap switch is provided.

Complete, ready for use, only.....\$10.00
Carrier for 35mm. film.....\$ 1.75

AT LEADING DEALERS EVERYWHERE

BURLEIGH BROOKS

INCORPORATED

127 WEST 42ND STREET

NEW YORK

Bass says:

This is a single-standard house—you get the same courteous treatment whether you make a personal appearance here or transact your affairs by mail . . . you've got to be satisfied or your money back with a smile.



Besse Roll Film: Range finder coupled to lens. . . 24x34 or 16 on 120 film . . . built-in filter . . . Voigtlander Voigtar F:3.5 lens. Rapid Compur. . . \$54.00

List \$67.50. At Bass . . . \$64.00
With Heilar F:3.5 lens . . . \$64.00
regularly \$80 . . . at Bass . . . \$64.00
Eveready case—\$4.75

Candid Midget: Schneider Xenon F:2 . . . takes all 35mm color or B&W cartridges . . . Compur Rapid . . . with eveready case and neck strap . . . \$43.75
. . . a true \$84.75 value at . . . \$43.75

$2\frac{1}{2} \times 3\frac{1}{4}$ R. B. Ihogee Reflex: Aut. focal plane shutter . . . self capping. T.H. 1/5th to 1/1000 sec. F:4.5 Veraplan Hugo Meyer lens, I.P.A. . . \$57.50
and 3 holders . . . easily worth \$90 . . . at Bass . . . \$57.50

Same 9 x 12 . . . \$62.50
In spite of turbulent times getting merchandise I with customary boldness produced for my expectant audience all over the world a new edition of my famous

STILL CAMERA BARGAINGRAM

I have named it No. 243 . . . and it catalogues in most graphic language with Homeric completeness all that is new and novel in the world of Still Cameras and accessories. 72 pages . . . mighty choice reading too . . . and it is yours for the asking. Write today. Also Cine Bargaingram No. 240. Either or both are Free.

Dept. MM

Bass CAMERA CO.
175 W. MADISON ST.
CHICAGO, ILL.

SPEED-O-COPY

For Better Pictures

The scientifically designed precision-built, ground glass focusing attachment for LEICA or CONTAX cameras.

SPEED-O-COPY permits CRITICAL FOCUSING, assuring of FINE DETAIL AND COMPOSITION in all photographic work, either black and white or color.

For the LEICA \$28.50
For the CONTAX 31.50



Available at all leading photographic dealers.

Write for illustrated literature.

D. PAUL SHULL
240 S. Union Ave., Dept. M1
LOS ANGELES, CALIFORNIA

Packard Photo Contest Prize Awarded



A Packard One-Ten Convertible Coupe was presented to Murray Hoffstein, 22 years old, New York City, by the Packard Motor Car Company. Mr. Hoffstein took the first-prize photograph out of nearly 2,500 photographs submitted by 1,000 contestants during the Packard Amateur Photographers' Contest held during the recent New York Auto Show.

Miss Pearl D. Cohen, Brooklyn, was the winner of the second prize, \$250. Twenty-four years old, Miss Cohen is employed as a clerk by her father.

Third prize of \$100 went to Clifford Rice, Elmhurst, N. Y. He is a young married man, employed as a lettering artist by the Winthrop Chemical Company, New York City.

35MM FILMS

DEVELOPED & ENLARGED

ONLY \$1.00

Wrap a dollar bill around your 36-exposure roll and let us show you a really good job of fine grain developing, with each good exposure enlarged to 3 1/2 x 4 1/2. All for only \$1.00. Regular 6 or 8 exposure films with 2 enlargements 25c

Send for Free Mailing Bags.
UNIVERSAL PHOTO SERVICE Box 612-B, La Crosse, Wis.

35MM POSITIVE FILM STRIPS

1 strip 36 exposures 35c

3 rolls \$1.00; 6 rolls \$1.75

Sharp, clear positive prints for projection made from your 35mm film strips; 3 x 2 film slides can readily be made from these positive strips.
BX 20 fine grain developing of negatives—35c per roll, 36 exposures. Reprints of standard film—40c.

Positive Print Co., 129 No. Wood Ave., Linden, N. J.



REVOLUTIONARY-NEW ENLARGER

USES YOUR CAMERA

Only \$6.25

Save cost of expensive enlarger with UTICAM! Utilizes your camera! Make enlargements with any folding, miniature, or box camera which opens from back. Simply snap camera to UTICAM. Takes negatives, 35 mm. up to 3x5. New, accurate focusing device! Ventilator.

SEND NO MONEY

Pay postman on delivery only \$6.95 plus postage. Compare UTICAM enlargement with same negative enlarged by expensive units. If not satisfied, return and your money refunded. No questions asked. Mail order to TECHNICAL EQUIPMENT CO., Dept. 21, 512 North Blvd., Cincinnati, O.

Save on quality 35mm DEVELOPING and ENLARGING

36

PANEL PRINT ENLARGEMENTS

Any 6 or 8 exposure roll film DEVELOPED and individual Panel Prints delivered in home-leaf leatherette album.

Send only (see above) \$1.00 order \$1.50

25c

The finest photo service of its kind at any price! Automatic "electric eye" ensures perfect individual prints—fine grain processed. Each good exposure enlarged to 3 1/2 x 5 Panel Print. Delivered post-paid in a LEATHERETTE LOOSE-LEAF ALBUM. Mail your roll with \$1—QUICK SERVICE.

\$1

Enlargement
Enlarged with
Superior Film
50c
3 for \$1.50

LEATHERETTE ALBUM

PHOTO LAB, INC. 2325 Georgia Ave., N. W. Room 220, Washington, D. C.

Combination Slide File and Viewer

The new Fotocraft Slide File (\$3.25), with a capacity of eighty 2x2-inch glass slides, has a self-contained illuminated viewer. The slide is placed on the ground glass of the illuminated section, and the light switched on for viewing.

Source: Raygram Corp., 425 Fourth Ave., New York City.

Kel Products

Kel products, manufactured by Kelly Photo Supply Co., Chicago, are now distributed in the East by Raygram Corp., 425 Fourth Ave., New York City.

The Kel Greeting Card Kit (\$1), for making greeting cards photographically, contains twelve different greetings, including Christmas, New Year's, Valentine's Day, Birthday, etc.

The Kel-Lite (\$1.25) is a four-use Safelite, complete with four different colored plastic discs, for all dark-room work.

Other Kel products are: Kel-Masks (25 cents per set); the Kel-Giant M. Q. tubes (9 cents each); Kel-Tensifier (25 cents each); and Kel-Periducer (15 cents each).

Improved Lafayette Enlarging Easel

The "Superior" easel (\$4.59) just announced by the Lafayette Camera Division of Radio Wire Television Incorporated, is constructed of steel with a rubber strip bottom. The 11" x 14" focusing surface is of white "Lumilite" bordered by inch scales. Masking guides are easily adjusted and locked, their alignment maintained by a guide frame at their "free" ends. As accurate, calibrated margin release device permits borders up to 2" in width.

Unique is an automatic locking device which, when the masking assembly is raised to insert the paper, holds it up leaving both hands free to adjust the paper. Then, with one hand holding the paper in position, the mask is released and lowered with the other.

Roberts and Atlas Tripods

Raygram Corporation, 425 Fourth Avenue, New York City, is now distributing the new Atlas and Roberts Tripods.

The Atlas Tripod (\$6.75) is built of seasoned wood and chromium plated steel tubing with reversible rubber and pointed tips. The height when extended is 5 ft. and when closed, 21 inches.

The contain One tory of magazin a Came Use Fil This cover credited complet within New Yo

Two 35 mm. film ar W. W. Ohio. (\$3.95) signed ing Leica magazin 100 feet loaded. The Agia and bulk film

The n funder (iag feat (1) Sh ponents fixed to will, the out deve (2) Ac

(4) It cially ad The in case, wit ously. V For furth Building,



"WHI

Fotoshop Catalog

The new Fotoshop Almanac Catalog, size 8 1/2 x 11 inches, contains 174 pages and over 600 illustrations.

One hundred and forty pages are devoted to a directory of all kinds of photographic products, and a separate magazine section features such articles as "How to Choose a Camera," "Indoor and Night Photography," "How to Use Filters," "Movie Photography," and many others.

This catalog is being sent on receipt of 25 cents to cover postage and handling, and this charge will be credited on the first purchase of \$2 or more, or refunded completely if the catalog is returned as unsatisfactory within 10 days. From Fotoshop, Inc., 18 East 42nd St., New York City.

Bulk Film Loading

Two winders for reloading 35 mm. magazines with bulk film are available from the W. W. Boes Co., Dayton, Ohio. The Deluxe Model A (\$5.95) (illustrated) is designed especially for reloading Leica, Robot and Contax magazines. Its capacity is 100 feet, and any number of exposures up to 36 can be loaded. It will also handle the standard magazines.

The Economy Model B (\$3.60) will take Eastman, Agfa and DuPont magazine spools. It holds 55 feet of bulk film and is equipped with a visual counting device.

Military Type Range Finder

The new Chess-United Military Type Precision Range-finder (\$5.50 with case) is claimed to have the following features:

(1) Shock-Proof. The optical and mechanical components are mounted individually in housings firmly affixed to the body of the instrument. The rangefinder will, therefore, withstand long and continued use without developing errors in readings or alignments.

(2) Adjustable. It can be adjusted for any slight errors in mechanical fatigue by turning the footage dial after loosening the top retaining screw.

(3) It is of the military type, using the super-imposed image principle.

(4) It is equipped with a glare-proof eye-piece, specially adapted for use by people wearing spectacles.

The instrument is supplied with a leather carrying case, with tab for removing the rangefinder instantaneously. Wholly American-made of American materials. For further details, write Chess-United Co., Emmet Building, Madison Ave., at 29 St., New York City.



"Will it hold still for two seconds while I take a time exposure?"

TEAMMATES DeJur Model 5A PHOTO-ELECTRIC EXPOSURE METER

\$11.50 With Sling
(Pigskin Zipper Carrying Case, \$1.00)



DeJur Superimposed Image Range Finder

\$5.50 With Sling and
Genuine Leather Carrying Case.

Made in America for all the world by

DeJur Optical Corporation

MEXICO?

WANTED: YOUR NAME AND ADDRESS FOR LITERATURE AND PRICES OF FINEST GERMAN CAMERAS, BINOCULARS, MOVIES. FOTO MANTEL: APARTADO 1459 VEN. CARRANZA 11, MEXICO CITY, No. 109.



Print Your Own

Cards, Stationery, Advertising labels, paper, circulars, photo and movie titles, tags, etc. Save money. Sold direct from factory only. Junior outfit \$4.50. Senior outfit \$16.00 up. Do popular raised printing like engraving with any press. Print for Others, Big Profits! Pays for itself in a short time. Easy rules sent. Write for free catalog of outfits and all details. Lohay Presses 21-14, Marlin, Conn.



EQUIPPED to Serve You...
with a comprehensive line of
CAMERAS & ACCESSORIES
KLEIN & GOODMAN
16 1/2 1/2 Street Philadelphia, Pa.

KINGSLEY PRODUCTS

- | | | |
|-----------------------|----------------------------|-------------------------------|
| • SQUEEGEE PLATES | Chromium Rust Protected | |
| • DRUM DRYER | LIST | 2.95 |
| | Chromium Rust Proof | |
| • TITLE KITS | Color 3.75 Black and White | 2.95 |
| • SQUEEGEE CLEANER | Bottle | 30c |
| KINGSLEY PRODUCTS CO. | | 48 Livingston Street New York |

Kroy Negatives Protected

in NEGALOPES

NEGALOPES, the original cellophane envelope, prevents dust, scratches, finger-marks. Assures better enlargements. Money-back guarantee.

38mm. size (each envelope holds strip of 4) 200 for \$1.00
38mm. size (each holds strip of 6) 150 for \$1.00
3 1/2 x 3 1/2 size 200 for \$1.00. 3 1/2 x 4 1/2 size 100 for \$1.00
4 1/2 x 3 1/2 size 100 for \$1.00. 3 1/2 x 7 1/2 size 50 for \$1.00

NATIONAL PHOTO LABORATORIES
55 W. 42 Street, Dept. MA New York City

COLOR PRINTS

from color transparencies, made by the wash-off imbibition method, color corrected.


4x 5—\$ 3.75 ea., lots of 6 prints \$ 6.00
5x 7— 5.00 ea., " " 6 prints 10.00
8x10— 7.50 ea., " " 6 prints 15.00
11x14—15.00extra prints 4.00

We are making a fine quality print, brilliant in color, semi-matte finish, salon mounted. Delivery ten days. Send cash with order or we ship C. O. D. Transparencies insured against loss. Satisfaction Guaranteed.

Discount to Dealers

NATURAL COLOR CORP.

326 N. Michigan Ave., Dept. M, Chicago, Ill.



BE WISE

BOOK OF KNOWLEDGE *Free*

1500 Photo-Cine Items at
MOGULL'S special prices.
Trades accepted. Terms.

MOGULL'S

67 W. 48th St., N. Y. C.

Clean Fresh

35 MM. BULK FILM

PLUS X \$1 for 25 ft.
SUPER 25 ft.
Superior No. 1 25 ft.

Tested Guaranteed

AGFA SUPREME \$125 for 25 ft.
SUPER XX 25 ft.
PANATOMIC X 25 ft.
INFRA RED 25 ft.
SUPERIOR No. 2 25 ft.

25 ft. MINIMUM order, postpaid in U. S. A.
Cartridges of above—3 for \$1. Cartridges of above 50c

SAVE MONEY FILM

Dept. A, 7434 Sunset Blvd., Hollywood, Calif.

35MM FILMS

FINE-GRAIN PROCESSED

ONLY \$1.50

OUR FINE QUALITY WORK ON DOUBLE WEIGHT PORTRAIT PAPER
Your 36-exposure rolls fine grain developed and each good negative enlarged to approximately 3 1/2 x 4 1/4 inches. Beautifully bright prints. Our complete and prompt service only \$1.50. Send for free mailing bags.

MINICAM PHOTO LABS, Dept. 30, La Crosse, Wis.

For FLASH shots use a GOODSPEED SYNCHRONIZER



Simple, practical, compact—easy to operate. Fits all popular make cameras. Put it on your camera and adjust it yourself in a few moments. Complete with synchronizer, reflector, batteries, suede leather carrying case, \$18.50. Send for literature.

GOODSPEED-Inc. 220 Fifth Avenue
New York, Dept. G1

35MM. FILM

New Dupont No. 3 Weston Ratings 125 Day, 64 Tung-
25 foot roll \$1.40

36 exposure roll 85c; 2 for \$1.

Dupont Superior Agfa Ultra and \$1

Eastman Plus X, 25 foot roll.....

Prompt deliveries, Post Paid, Free Catalogue.

Repacked and Guaranteed by

OPTICAL DEVELOPMENT CORP.

KATONAH, N. Y.

Fluorescent Lighting

(Continued from page 31)

The total of 640 watts could be rated as equivalent to more than 6000 watts of tungsten light.

The photo was taken on 5x7 Kodachrome daylight type film used without a filter. The exposure was of a half second duration and made with a 13-inch Heliar lens stopped to f8. The transparency was fully timed and brilliant. The lack of deep shadows is made possible by this new style of lighting. In making the picture, the bank of eight tubes was used as the main source of light, and placed about eight feet from the subject. Another unit of four tubes was placed about seven from Miranda, on the shadow side. A third unit of four tubes was placed about six feet to the rear and side of the subject. This light separated the subject from the background and gave an illusion of the third dimension. Each of the tubes is set in its own satin finish aluminum reflector. The lighting is soft yet has a powerful actinic ray which does not affect the subject's eyes.

The film picked up the natural skin texture and tone. The large earrings were the only source of trouble.

In order to eliminate any possible chance of movement they were tied down with strips of adhesive tape which were concealed from the lens. Miranda did not use any make-up other than a little lip stick and pencilling of the eyebrows.



"Something queer about that new boarder—he wants to take a bath."

Remote Control Cable Release

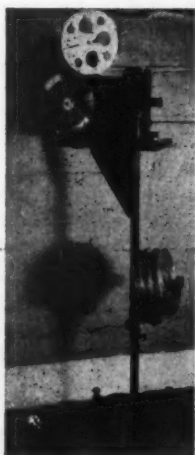
(Continued from page 88)

tube. Tighten up the screws and the remote control gadget is ready for use, Fig. 6. When the control handle is pushed IN, the wire goes down inside its casing, shoves the dowel against the cable release plunger inside the tube and trips the shutter. When the pressure is released, the spring pulls out, returning everything to its original position, so that the control may be used for time, bulb, instantaneous, or flash exposures.

To use this remote control device, screw the cable release to the camera and fasten the control tube to one of the tripod legs by running a bolt through the pipe clamp. Get yourself a backless stool or a soap box. Place the camera on a table with the tripod legs collapsed. Place your stool about four feet from the camera and sit on it. Measure the distance from the seat to the top of your head and get up. Place some object like a box or a pile of books of the same height on the stool and locate it in the camera finder. Set the camera for this distance and push the books on the floor.

A suitable background completes the requirements except for the placing of a mirror on the table beside the camera so that you can study the lighting and facial expressions as you pose. You'll find that the six foot cable control is also long enough to allow you to take three quarter length shots of yourself.

Projection Stand



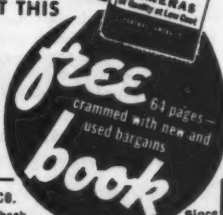
Rebuilt from an old metal stand, this projector base not only supports the movie machine, but also four 400-foot 16 mm. reels — enough for an hour's show—in a special carryall mounted on the vertical column. The 36-inch stand has threaded feet which are adjustable for height variations. The base in this case is 7 by 12 inches, but must of course be built to dimensions of the projector at hand. A similar stand can be constructed with hollow pipe jointed to a heavy base, but to avoid vibration should not run too high.—Ormal Sprungman.

FIRST STEP TO Successful Pictures

Send to "CENTRAL"

GET THIS

Free illustrated catalog listing everything photographic, still and movie cameras, films, lenses, equipment at tremendous savings. Hundreds of bargains new and used — all guaranteed. Liberal trade-ins on camera and equipment. Write now for free copy of this newest money saving bargain book—just out. Limited edition. Hurry!



CENTRAL CAMERA CO.

Dept. A-12, 230 So. Wabash Avenue, Chicago, Illinois

since 1909

35mm. DEVELOPED FREE


Pay only for what you get. Maximum charge \$1.00. Univex Rolls, \$2.00. Our rate is 4c per print. If less than 25 negatives are good, we issue 4c credit per print. This includes enlarging all to size 3 1/4 x 4 1/2. High class work guaranteed. Fine Grain Developing. In today—out tomorrow. SAVE MONEY. Send roll and \$1.00 today. (Or sent C.O.D. plus postage.

MINIPIX LABORATORIES

100 N. LaSalle St.

Dept. 312

Chicago



ELECTRIC EYE

Argus, Leica, Univex-Mercury 35 MM Fine Grain Developed and 3 1/4 x 4 1/2 Enlarged Prints by Photo-Cell method. Money Back Guarantee—Drop us a card for the facts and FREE Mailing Bag.

PHOTO-ELECTRO LAB.
P. O. Box 261, Bridgeport, Conn.

- 10 Months To Pay For Your
- CAMERA and EQUIPMENT

FREE Write for new 1940 catalog describing hundreds of items, all nationally advertised brands. Prices are lowest cash prices. No interest or carrying charges. SEND TODAY! Dept. M-6.

UNEEDA
275 LIVINGSTON ST.
Brooklyn, N. Y.

GUARANTEED—To read fewer lowlight and higher highlight intensities more accurately than any other Meter....regardless of price.

ONLY \$5

PHAOSTRON
ELECTRIC EXPOSURE METER
For Stills or Movies

Ask your dealer...or write
PHAOSTRON CO.

ALHAMBRA, CALIF.



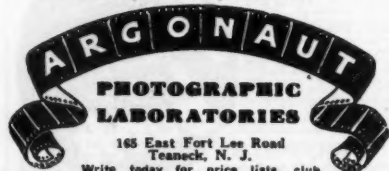
EARN PHOTOGRAPHY from Experts

We offer you an unusual opportunity to learn photography under the personal direction of foremost photographic experts. Commercial, News, Portrait, Advertising, Motion Picture or Color Photography. For pleasure or career. Wonderful opportunities. 30th year. Free booklet.

NEW YORK INSTITUTE OF PHOTOGRAPHY
10 West 53 Street (Dept. 117) New York City

THERE'S ONLY ONE "BEST"

It costs a bit more to get the "best" photo-finishing — but you'll agree it's worth more when you see the superior results attained by having your pictures developed and printed at



165 East Fort Lee Road
Teaneck, N. J.

Write today for price lists, club membership plan and other information.

1940 CLEARANCE SALE! CAMERA BARGAINS

Hundreds of NEW and USED
Camera Bargains

WRITE TODAY For Our FREE "Bargain Bulletin" 500.

New Pay-Plan on New Cameras

- No interest or carrying charges
- No down payment
- First payment after 30 days
- Up to 4 year to pay
- Regular low cash prices

EXCHANGE DEPARTMENT

Musical Instruments, Guns, Microscopes, Binoculars,
etc., Traded for Latest Cameras.

GEORGE LEVINE & SONS

15 CORNHILL BOSTON MASS
A QUINCY CENTER ON CORNHILL

GUARANTEED ENLARGED WITH FINE GRAIN DEVELOPING • PHOTO CELL PRINTER

Each exposure enlarged to 3 1/4" x 4 1/4". 35 mm 36 exp. roll \$1.00.
18 exp. or 16 half vest pocket 50c;
828 roll 25c. Daily service.

PHO-T-PHO
Dept. M, Box 24,
Highland Park,
Michigan

FREE 5x7 ENLARGEMENT FREE

Of Your Favorite 35mm Negative

We make you this FREE offer to acquaint you with our superior mail order service. When sending negative PLEASE include COMPLETE list of your present photographic equipment. NO MONEY REQUIRED—NO STRINGS TO THIS OFFER.

HOLLYWOODLAND STUDIOS
SOUTH GATE, CALIFORNIA

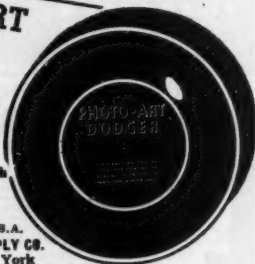
PHOTO-ART DODGER

- for Special Effects
- Vignetting
- Spot or Localized Printing
- DODGING in Enlarging Work

Diameter: 14 inches with
full directions only

75c

See your Dealer—Made in U.S.A.
PHOTOGRAPHIC ARTS SUPPLY CO.
39 West 60th Street, New York



Book Reviews

QUARTERLY SUPPLEMENT No. 1 and 2 for the Photo-Lab-Index, 88 pages. Morgan & Lester, Publishers. \$1.00 per year.

These supplements contain corrections, additions, and changes for previously published material in convenient loose-leaf sheets to be substituted or inserted as indicated.

These supplements contain the following material: 22 New Time-Gamma-Temperature Development Charts . . . Complete Revised Filter Factors . . . New Developing and Fixing Formulas . . . Latest Film Speed Ratings . . . Latest Film Speed Conversion Factors . . . Directions for Painting Darkrooms . . . Latest Film Notching Codes . . . Latest Relative Paper Speeds.

HANDBOOK OF PHOTOGRAPHY, edited by Keith Henney and Beverly Dudley, 6 1/2" x 9 1/4". Illustrated. Whittlesey House, \$7.50.

This book provides in one volume an exhaustive exposition of the serious aspects and scientific basis of photography. Specialists were selected to write many sections of the book.

The subjects covered include the optics of lenses, photographic sensitometry, exposures and exposure meters, developers, theory of development, special printing processes, stereoscopic photography, infra red, ultra violet, color photography, motion picture photography, aerial photography, astronomical photography, high speed photography, photomicrography, spectroscopic photography and radiography.

Edited by Keith Henney and Beverly Dudley, editors of Photo Technique, it is a photographic encyclopedia in one volume.

THE TECHNIQUE OF PICTORIAL PHOTOGRAPHY, by Paul L. Anderson. 403 pages, 28 illustrations, 31 diagrams, indexed. J. B. Lippincott Co., \$3.50.

Based on Mr. Anderson's popular book, "Pictorial Photography: Its Principles and Practice," published some years ago, THE TECHNIQUE OF PICTORIAL PHOTOGRAPHY embraces the material of its predecessor including at the same time all the current developments in cameras, films, lighting, processing, and color.

Complete chapters on printing techniques such as Platinum, Carbon, Carbro, Fresson, Gum, Gum-Palladium, Photogravure, Oil and Bromoil should be especially helpful to the photographer who is interested in these advanced processes.



by J. H. SAMMIS

CABLE RELEASES LEFT IN THE CAMERA—confidentially, they kink!

FOR ALL THEIR GOOD INTENTIONS, those non-photographic friends who continually call up by phone or breathlessly rush up to one on the street and practically insist on your taking a picture of something they think would "make a good picture" are unmitigated nuisances (pardon the bitterness, but have you ever been awakened at 6 A.M. and asked to come over and photograph some "perfectly lovely hear frost?"). Oh well, Michael Angelo probably had his little problems too!

ONE INVETERATE SHOW PHOTOGRAPHER has been dubbed "The Bantam of the Opera."

There is a young photog from Floozess
Who makes all the equipment he uses,
It keeps him so busy
That we wonder "Is he
Gaining as much as he loses?"

YOU SAY THE NICEST THINGS DEPT:
"Why your prints look just like those wire-photo pictures in the newspapers!"

ONE SHOT COLOR CAMERAS: It's done with mirrors!

ONE FOR THE MAKE-UP ARTIST:
"I'm just like putty in your hands!"

SERVICES FOR MEMBERS OF IMMEDIATE FAMILY ONLY: "I don't think I'll take the f:1.5 lens but I will take a package of art corners."

NOW THAT YOU'VE GOTTEN ALL THAT NEW EQUIPMENT: how about (1) getting it insured (2) reading all the instructions (3) writing down the serial numbers (4) using it.

SAID THE MILK THIEF, as one of those flash bulbs (old style) goes off, "foiled again!"

NUDE INDIGO—cold model.

FREE Camera Catalog
YOU SAVE MONEY!

Now — order at home. Select your camera, equipment and supplies from the book that has everything in photography—all the leading names—at real money-saving prices. Amateurs and professionals alike have made this book their photo-buying guide. Send for your **FREE** copy at once. Name and address on a postcard will do.

LAFAYETTE CAMERA

Dept. 47A—100 Sixth Ave., New York, N. Y.

CANDID CAMERA FANS ALL THIS FOR

\$1.75

ANY 36 EXPOSURE ROLL—1. Fine grain developed; 2. One 3x4 glossy finish print of each 36 exposures; 3. Your negative vaporized (preserves negative forever); 4. Reload your magazine with Super Sensitive Fanchromatic film, 36 exposures; 5. Valuable coupon with each order. Total Value \$3.36. Yours for \$1.75. California buyers include sales tax. Write for free mailing bags.

HOME-PHOTO SERVICE

BOX 86, HUNTINGTON PARK, CALIF.

35 MM. NEGATIVE USERS!

"RELOAD YOUR OWN"

EASTMAN — AGFA — DUPONT

Fresh, tested stock... Immediate delivery.

25 FEET FOR \$1.00

Minimum order 25 feet—POSTPAID

RELOADED CARTRIDGES—36 exposures—3 for \$1.00.

ORDER YOUR SUPPLY NOW!

PACIFIC COAST FILM CO.

1510 No. Sierra Bonita Hollywood, California

CAMERAS-ACCESSORIES
NEW LOWEST PRICES

CLEARANCE SALE!
We're unloading hundreds of New and Used items. Write us today—**REAL BARGAINS.**

CAMERA EXCHANGE ORIGINATORS SINCE 1900
110 FULTON ST. NEW YORK CITY

TRADES ACCEPTED—Write Dept. M-3

"BETTER PICTURES" \$1.00

Any 35mm. Roll—36 exposures developed and printed to size 3 1/2x5—\$1.00. 18 Exposure Roll—40c. No. 127 Split Candid Roll—16 exposures developed and printed to 3 1/2x4 1/4. We use only Fine Grain Developer printed on Kodabrom Paper. Prompt service. Send Roll and money today.

BETTER PICTURES 2143 Farragut Avenue
Dept. M, Chicago, Ill.
Send No stamps or coin to cover mailing charges.

Learn Photography at HOME

Splendid opportunities. Prepare quickly in spare time. Easy method. No previous experience necessary. Common school education sufficient. Many earn while learning. Send for free booklet "Opportunities in Modern Photography", particulars and requirements.

AMERICAN SCHOOL OF PHOTOGRAPHY
3801 Michigan Avenue Sept. 1941 Chicago, Illinois

**INDOOR PICTURES
ARE EASIER
WITH**

**BRITELITE-TRUVISION
REFLECTORS**

*... dependable for
bright, right light!*

Designed and constructed along principles recommended by lighting experts, Britelite-Truvision Reflectors give you every advantage... whether you're shooting portraits, candid pictures, movies or still... in black-and-white or color. Their efficiency is reflected in the perfect results that are so simple to achieve.



Model 20

Superlector for photofoods
No. 1, 2 and 500-W T-20 \$3.50

Model 4

Concentrator\$1.50

Model 7

9-Inch Parabolic for No. 1
photofood\$1.50

Model 10

10-Inch Corrugated Goose-
neck for No. 1 or 2 photo-
foods\$1.75

See the Britelite-Truvision Line
of Screens, Reflectors, Spot
lights, Paper Sates, Projection
Cases, Etc., at Your Dealer,
or Write for Catalog Dept.
Made in U.S.A.

M-1



MOTION PICTURE

SCREEN & ACCESSORIES CO., INC.

251 WEST 56th STREET

NEW YORK CITY

EXCLUSIVE ITEMS

NO-HEAT GLASS

Protects negatives from
heat in Enlarger or Pro-
jector at38c up

HYP-O-RID

Safe, sure, fast elimina-
tor of Hypo from prints,
etc. at38c

At your dealers or direct

LYNHOFF LABORATORIES

BOX 442-M

ROCHESTER, N. Y.

Index to MINICAM

An index covering MINICAM Magazine, Volume 2,
September, 1938, through August, 1939, is available at
ten cents the copy; or free with a \$2.50 one year
subscription or renewal.

MINICAM MAGAZINE

22 East 12th Street

Cincinnati, Ohio

?? QUESTIONS ?? to the Editor

Q. What is the difference between bromide and chloride printing papers?

Ans. Bromide paper is coated with silver bromide; chloride papers are coated with silver chloride. The bromides are used for enlarging, the chlorides for contact printing. The emulsion speed of bromide paper is much greater than that of chloride. Chloro-bromide paper, which lies between chloride and bromide papers in speed, is used for both contact printing and enlarging.

Q. Have been advised to stick to one brand of film for all my pictures until I learn how to take good shots. Which film shall I use?

Ans. Any one of the following are fine for general all-around use as they combine good quality with speed in both daylight and artificial light: Eastman Plus X, Agfa Superpan Supreme, Agfa Superplenachrome.

Q. What is the difference between a yellow filter and a yellow-green one. Which gets the best cloud effects?

Ans. The yellow-green filter is for use with panchromatic films of the super-speed variety, such as Super XX, Ultra Speed, and Superpan Press. With other films use the yellow filter.

8mm BULK FILM 16mm

Fine grain, Semi-ortho, Non-halation Weston 8. For titles or reversal. Lab. packed. Free formulas ea. order. All film guaranteed fresh stock—not re-perforated positive. Write for big bulk film catalog. Calif. buyers include Sales Tax.

Load Your Own and Save Money

400 Ft. Straight 8mm for Univex, Keystones, etc. \$3.50
800 Ft. 8mm in dbl. 8mm width for all dbl. 8mm cameras. \$5.00
400 Ft. 16mm..... \$4.75
SPOOL-8—Univex, 8 for \$1.00 Dole, 8mm, ea. 40c
50 Ft. 16mm, ea. 40c 100 Ft. 16mm, ea. 80c

HOLLYWOODLAND STUDIOS

"The West's Greatest Film Mail Order House"
SOUTHWEST CALIFORNIA

35MM FILM DEVELOPED & ENLARGED

36 EXP. ENLARGED TO 3x4

Your 36 exposure 35mm. roll ultra fine-grain developed and one brilliant 3x4 print of each frame, only \$1.00! Beautiful fade-proof quality. RUSH service—IN TODAY—OUT TOMORROW! Send rolls NOW or write for FREE matters, free print and folder giving secrets of shooting better pictures. SUPERLABS, Box 620, ELROY, WIS.



TRICK EFFECTS

with any camera

By **WILLIAM L. MORGAN**

Illustrated by the Author



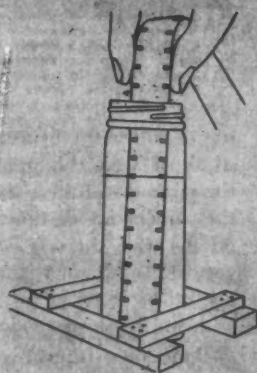
SOME of the most effective special effects are among the easiest to obtain.

Backward Action may be done with any movie camera. We all have seen movies of the diver who comes shooting feet first out of the water and lands effortlessly on the edge of the springboard. The trick is accomplished simply by shooting with the camera held upside down. (Fig. 1.)

When the film has been developed, the scene is cut out, turned end for end, and spliced back into the reel. The result is that the subject does backwards on the screen whatever he did normally in front of the camera.

With 8 mm., the film must be turned over when projected as the sprocket holes are on one side only. Objects will be reversed, looking-glass fashion, or the way a still picture looks when printed from a negative in reverse. Re-focus the projector when the film is thus reversed.

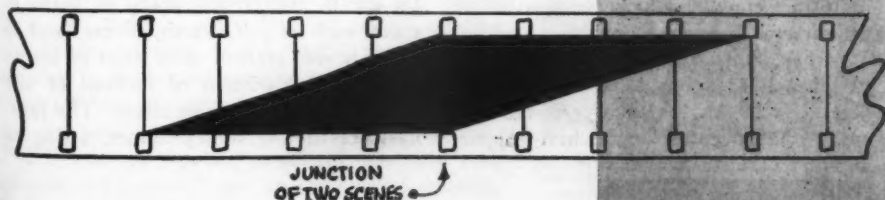
Many possibilities for backwards filming suggest themselves. A boy jumps from the ground onto a wall as high as he is; a dog backs away from a strange new pet, perhaps a kitten or a turtle; an armful of wood is gathered effortlessly as the subject

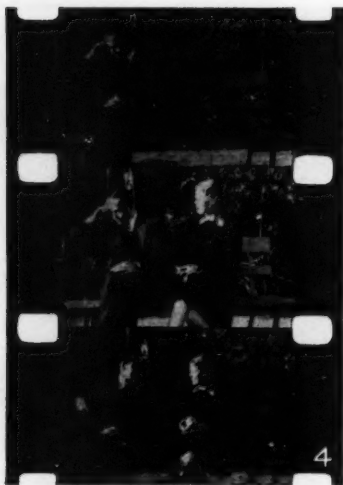


(1) **REVERSE ACTION** is obtainable with any camera. Simply shoot with the camera upside down.

(2) **FADES** can be made after a film is processed by using a chemical dye in a test tube or glass jar.

(3) **WIPES** can be made with a short length of opaque tape laid diagonally between two scenes covering about eight frames.





(4) A CHARACTER suddenly appears as if by magic. This is accomplished by stopping the camera, letting the subject enter and then starting the camera again.

stands still with outstretched arms and the sticks of wood obligingly jump up from the ground. All these shots are filmed with the camera upside-down as the boy jumps off the wall, the dog dashes up to investigate the newcomer, the subject tosses an armful of wood in the air and stands still with waiting arms.

Your own films may suggest the occasional use of the backwards shot. In fact, just such a bit of nonsense may be the high spot of your next picnic film or informal backyard movie.

A serious application of this shot might be in filming from a train, boat, or plane. An arrival shot is what you want—the approach from a distance, as you get closer and closer to your destination. If, however, you were unable to make the shot on your arrival, you can make the same approach shot when you leave: simply film it upside-down!

Stop Motion enables your subjects to perform seemingly impossible acts before the camera.

Perhaps a young man is seated on a park bench, dreaming of his absent sweetheart. (Fig. 4). Suddenly—instantaneously—she is seated beside him—appar-

ently without going through the formality of entering the scene! The familiar rabbit-out-of-the-magician's-hat trick can be repeated with endless variations, as an astonishing array of objects are removed from a grocery sack, or waste-basket, or packing carton. Subjects appear or disappear at will when photographed in stop-motion.

Here's how it's done: First of all, the camera must be on a rock-steady support, preferably a tripod. Film the subject in the usual manner until you come to the point where you want the person or object to appear or disappear. Stop shooting, being careful not to move the camera. The subject enters the scene—or leaves it—while those who are to remain in the shot keep perfectly still. You then resume filming. A bit of imaginative planning will suggest a number of sequences which can be created by stop motion. Depending on their treatment and subject matter, they may be spooky, simple nonsense, or in the realm of pure fantasy.

Tricks With Camera Speeds. Most cameras can be operated at speeds other than the normal sixteen frames per second. If your camera has a half-speed adjustment, you can shoot *fast-motion*, which is the opposite of "slow-motion." A busy crowd becomes busier, a picnicker escapes from an angry bull by leaping over a fence in nothing flat, a group of children leaving school for vacation storms out the doorway in record time, a small boy gobbles his lunch amazingly so he can go out and play. Watch for situations in your own movies which suggest the use of fast-motion to exaggerate action and convey the idea of extreme speed.

When using the half-speed setting in serious filming to gain extra exposure under adverse light conditions, you do not want a fast-motion effect. Have your subjects act slowly and deliberately, so the action will appear normal when projected on the screen.

Slow-motion is created by taking the shot at 32, 48, or 64 frames per second. Its use in the critical study of form in sports such as golf, tennis, diving, and so forth, is well known. As a stunt its use to convey the condition of feelings of the subject gives an amusing effect. The family after the big turkey dinner, a dog or

cat after sniffing the cork of a champagne bottle, a sleepy child going up to bed—such situations offer a legitimate excuse for the use of slow motion.

Fades, Dissolves, Wipes. While not strictly “trick” shots, these call for camera manipulation differing from ordinary shooting.

Fades, dissolves, and wipes are all devices to make a transition from one scene to another. A fade-out definitely closes the action on one scene. The next scene fades in on an entirely different subject—or if on the same subject, a definite lapse of time (and condition, probably) is indicated.

A dissolve speeds up action between two related scenes of the same subject. In the transition, both scenes are on the screen simultaneously for a few moments. The dissolve makes the elimination of intervening steps between action seem natural. Thus, a shot of a vacuum cleaner salesman starting to walk up to a house could plausibly dissolve into a shot of the salesman already at the door trying to convince the lady of the house of the superiority of his product.

A wipe usually is used to provide a transition between scenes which are related not so much to each other as to a common idea. It consists of the new scene seemingly pushing the old scene off the screen.

The average movie camera is not equipped to make these transition effects in a strictly professional manner. However, a satisfactory approximation can easily be made in a number of different ways.

Fades are easy if you have some control over the light source. For a fade-out, simply have an assistant slide a cardboard over the light as the scene is being completed. To fade in, reverse the procedure.

If the light cannot be controlled, try fading in or out by use of the diaphragm ring on the camera lens. To fade in, start shooting at the smallest diaphragm opening (*f*16 or *f*22) and open up steadily to the correct opening for that scene. The fade will not be very successful if the scene calls for a fairly small diaphragm opening anyway. But if you are shooting under adverse light conditions and have to open up for normal shooting,

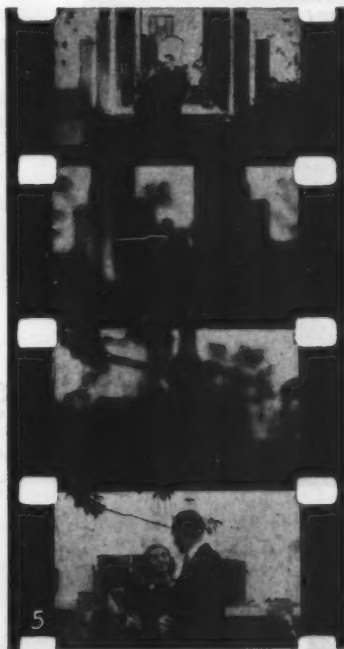
you will have a very acceptable fade.

Fades can be put on scenes after the film has been developed, through use of a chemical dye known as “Fotofade”. Use a tall slender jar, such as that shown in Fig. 2. Dip the film carefully into the solution so that the first three frames are completely covered. Count 25, then dip in the next frame. This and the next four frames should be given a count of twenty each. The next frame is given a count of eighteen, the next a count of sixteen, and so on, lessening by two each time. After the frame that is given a count of two, the next frame should be just dipped in the solution, and the entire film end removed and immediately washed.

This gives a fade of one second duration. The fade-in, of course, will double this to two seconds. If a longer or shorter fade is desired, simply adjust the count, keeping it in the same ratio, however.

If your camera is of the focusing type, you can create an effect to simulate a dis-

(Page 128, please)



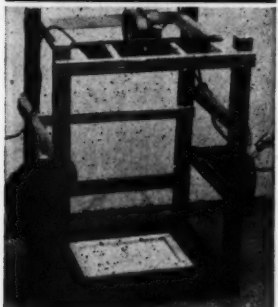
(5) DISSOLVE effect created by turning the lens out of focus at the end of a scene and moving it back into focus for the next.

Make your own

ANIMATED CARTOONS

By ORMAL I. SPRUNGMAN

Illustrated by Gus Orosz



EVERYONE who has watched frisky little cartoon characters trot over professional movie screens has had the urge to try his hand at animation. Pen and ink personalities can be made to look and act like human beings on your home screen.

Examine a cartoon comedy, frame for frame, and you will discover that the secret of animated cartooning lies in the ability to give characters spontaneous action through appropriate spacing between drawings. In making a drawing of each portion of the movement of, for example, a person raising an arm to salute, $\frac{1}{4}$ " spacing will cause the limb to move up a bit faster than if only $\frac{1}{8}$ " spacing were employed.

This is more easily understood if you get out one of your 8mm or 16mm movie reels, thread it in your film viewer, and study each frame in a given sequence. If the action is a normal walk, note how many frames were exposed to show the lifting and lowering of the foot. If the person is running hard.

(3) Closeup of top of drawing board. A rectangle of glass is placed in the center of the board and backlighted to aid tracing.

(1) Gus Orosz at his drawing board, goes to work on an animated cartoon.

(2) Home-made outfit, patterned after professional camera stands used in animation. Distance from drawing to lens is 24 inches. Note auto head-lights used as lamp reflectors.

(4) The lower portion of this animated figure is drawn on a transparent celluloid "cell" which is used by laying it on top of the drawings made on paper of the positions of the upper part of the figure as it moves.





5

(5) Backgrounds for cartoons are simple, without too much detail. In amateur work they are drawn on pieces of celluloid.

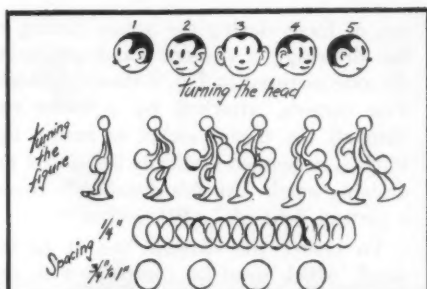
(6) Drawing showing the positions of a head in turning, a figure turning and moving off. Spacing for slow motion is $\frac{1}{4}$ inch, for rapid motion, $\frac{3}{4}$ to 1 inch.

(7) Walking action can be shown in eight drawings and running in five, after which the sequence is repeated from one to eight or one to five.

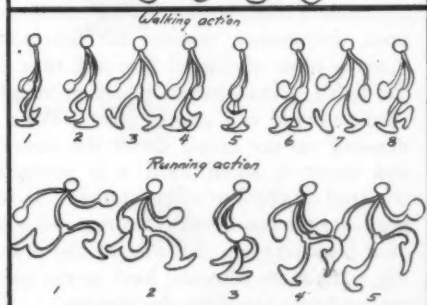
(8) Parts of a dummy when jointed together can be moved and photographed, lessening the amount of drawing to be done.

(9) Jointed dummies in action.

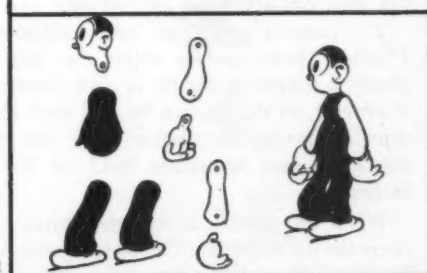
6



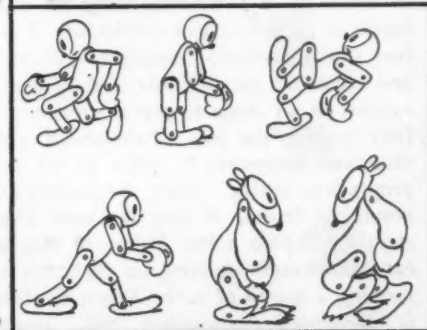
7



8



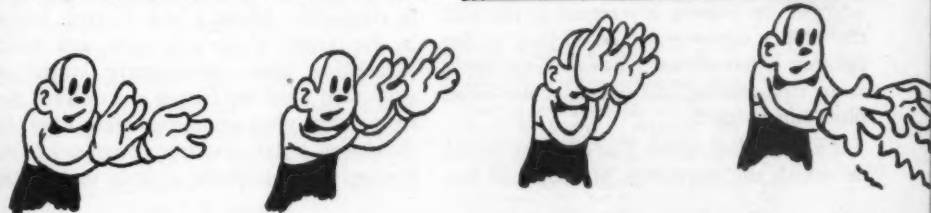
9



note that fewer frames are used to show the entire action because in each frame the arms and legs have moved farther than they would if the action were slower. The faster you want your animated characters to move, the wider must be the spacing between the positions of the movable parts in consecutively filmed drawings.

The camera. To make your own cartoons use a good movie camera with a reasonably fast lens, preferably one which will make single exposures. Cameras without this feature, however, can be made to expose single frames by a quick down-up pressure of the exposure button. The focusing type lens is ideal for this work, but the fixed focus type can be used if a portrait attachment is employed to permit close-up shooting.

The camera stand. To hold the camera rigid so that it will not vibrate or move



out of focus during the actual filming of the drawings, a camera stand similar to the one pictured in Fig. 2 should be built. The camera, attached by a screw run through the tripod socket to insure rigidity, is suspended vertically 24" above the drawing easel. At this distance it covers a picture field of $7 \times 9\frac{1}{2}$ inches.

To center the camera bolt it to the stand, which must be constructed to suit the camera used, let the camera run down, open the shutter, remove the film gate, insert a piece of fogged film and turn on the lights. Transparent paper or roughened celluloid can also be used. Place a drawing on the board under the camera and move it about until it is perfectly centered on the film in the camera. Drive pegs into the baseboard to correspond with dual punchings on one side of the drawing, replace the filmgate, load up the camera, and you are ready for filming.

To prevent drawings and celluloids ("cells") from curling under the lights, mount a hinged rectangle of glass, framed if desired, so that it can be laid over the drawing during the filming. The size of the glass may be either 8×11 or 9×12 inches.

When the camera is centered correctly, open the diaphragm. The opening should be about $f/8$ or $f/5.6$ when using 200-watt lamps or photofloods in a reflector. I use two discarded auto headlight reflectors, one suspended on each side of the camera support at an angle to prevent reflections from striking the lens. Experiment with films and exposures in order to get the proper lens setting. Once the correct exposure is found, it may be used constantly. Expose a few frames of film at each diaphragm opening on the camera, keeping a record of each. When the film is developed, projection will reveal whether the camera is centered or not and the proper exposure to use so long as the lighting is not altered. For cartoon work, as in title-making, the cheap, color-blind films can be used.

The drawing board. The drawing board on which the characters are sketched can

be of any size. In the center of the board cut a 9×12 " rectangle and fit a piece of window glass into the opening. The glass must be level with the surface of the board.

Two $\frac{3}{16}$ " pegs are then driven into the board $5\frac{1}{4}$ " apart to fit the punchings you make in the paper drawings and cells. These pegs hold the drawings firmly, and are the same distance apart as those on the camera stand itself.

Place a light beneath the glassed opening to make the tracing of separate drawings easy. Transparent paper which will take ink without smudging can be substituted if you do not wish to make such a drawing board.

Materials. The materials needed are a supply of white typewriter paper, a few 9×12 " celluloid sheets, drawing ink, ball-pointed pens, a small brush, and a few pencils. Punch holes $5\frac{1}{4}$ " apart in both paper and "cells" to fit the pegs on the drawing board and camera stand.

Professional studios use cells for all animation and draw the backgrounds on paper. But the amateur should animate on paper, using cells for backgrounds and those parts of figures which do not move. Celluloid can be used over and over again if the ink is washed off with a light solution of ammonia, and the cell is left to soak over night in water. Since celluloid does not take ink readily at first, smear each sheet with ink, rubbing it all over the cell, then clean and dry it. The next time ink is applied it will adhere.

Animation tricks. Have you noticed that the first scene in a professional cartoon opens with a "circle in?" This effect is secured by using 12 sheets of 9×12 " black cardboard, properly punched to fit the pegs on the base of the camera stand. In the center of one, cut a hole $\frac{1}{2}$ " in diameter. Make a hole $\frac{1}{2}$ -inch larger in the center of the next card, and make succeeding holes increasingly larger in each card until the largest one exceeds the field. By photographing each card in numbered order, say, from number one to twelve, you can create a circle in. Circle

out the picture by reversing the order, photographing the largest first and the smallest last. Such cards can be filed away for use in other cartoons.

All drawings should be as simple as possible, since some animated figures must be drawn over and over again. Professionals use the oval method to draw their characters in order to speed up the drawing. The drawings are first pencilled out, then inked, after which the pencil lines are erased.

Ordinary action is spaced $\frac{1}{4}$ " or $\frac{1}{8}$ ", and two frames of each drawing are exposed. Fast action is spaced $\frac{3}{4}$ " to 1", and exposed one frame each.

When animating figures, the first drawing should be used as a model for all succeeding drawings. The parts which do not move can be traced to keep the likeness throughout the whole scene. Each figure is advanced $\frac{1}{4}$ ", with arms and legs drawn to the proper position for the motion wanted.

When a background is used, draw it on a cell. It is best to carry the lines of the background past the field lines so that edges will not show. Number all drawings to keep them in order. Even crude drawings can be used in animated cartooning, for when they are in motion the drawing technique is scarcely noticed.

Clever tricks can be worked out under the camera. One trick which will mystify spectators is to reveal a line running around on the screen until it develops into a complete picture. It's done in this manner: First, a figure is lightly drawn with pencil. This is placed under the camera and slipped over the pegs so that the drawing paper will not shift. As an extra safeguard the corners are held with thumb tacks. With a pen start at the top and draw a $\frac{1}{2}$ " line. Expose it for two frames. Then continue to draw $\frac{1}{2}$ " at a time, drawing and exposing two frames each time until the drawing is completed. Expose the finished drawing for about 20 frames in order to keep the animated drawing on the screen long enough to be viewed. The result will be

(Page 128, please)



(10) These drawings are for a "pan" run. To show a figure running in the center of the field with only the background moving by, draw the background scene on a large sheet of stiff cardboard. The figure is then drawn on sheets of celluloid. The long background called the "pan" in professional studios, is marked along the top at $\frac{1}{4}$ -inch intervals and the pan is moved $\frac{1}{4}$ -inch for every exposure. By changing the cells each time the pan is moved, the figure will be shown making forward progress.

Sound FOR YOUR MOVIES

By R. C. POWELL
(Presto Recording Corp.)

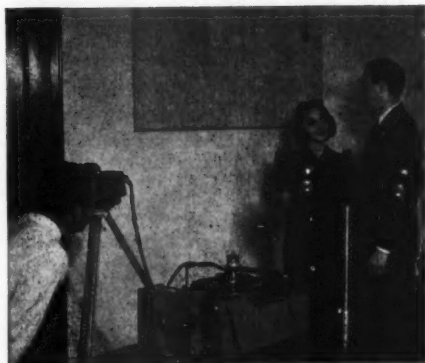
WITH the syncrosound system manufactured by the Presto Recording Corp., the home movie maker can make pictures with dialogue, music, and sound effects all reproduced and synchronized as perfectly as sound on film.

The entire sound recording and reproducing equipment is contained in a single carrying case that weighs less than 50 lbs. The cost of the equipment is about 1/10th as much as the lowest priced sound-on-film equipment. The cost of the sound recordings themselves averages about 20 cents a minute of running time, or \$1.00 for a five minute reel. The synchronization is automatic requiring no supervision or adjustment once the picture is started.

It can be used with any standard make of silent 8 or 16 mm camera and projector. It consists of a portable sound recorder, an electric motor drive for the camera and a small attachment for the projector. The latter units can be installed for a few dollars and they can be quickly detached if it is desired to make silent films.

SYNCHRONIZING EQUIPMENT:

Synchronization is accomplished by use of three rotating commutators. Each com-



Making a talking picture using an 8 mm. camera which has been equipped with a sound recorder. Note microphone suspended above subject just outside the frame.

mutator has six segments or contacts and a rotating brush. The master commutator, which controls the speed of the camera or projector, is attached to the center shaft of a recording turntable. It revolves at standard phonograph speed, slightly less than 80 revolutions a minute. Thus the rotating brush makes 480 contacts a minute with the segments.

Secondary commutators are attached to the camera and projector. The camera drive unit consists of a small electric motor, a commutator and a shaft and gear which engages with the spring gear of the camera.

The drive system may be permanently attached to the camera or the two may be held together by the tripod screw so that the camera may be removed from the electric drive unit and operated on the spring drive at any time. A worm and gear system in the drive unit drives the camera commutator at 80 revolutions a minute, the same as the turntable, and the camera at silent picture speed, 16 frames a second.

The projector unit consists of a commutator and a worm and gear which couples to the shutter shaft of the projector so that the commutator will revolve



Projecting the picture. The loudspeaker shown at the right of the screen ordinarily is placed directly behind the screen. The recorder, seen in the foreground, plays the synchronized disc recording.

at 80 r.p.m. when the projector is running at proper speed. The synchronizer unit has a bracket by which it is attached to the projector frame. A coupling is provided to attach the unit to the shutter shaft. The commutator connects in series with one of the power supply leads to the motor.

Making a Talking Picture. To make a talking picture the camera and lights are set up in the usual way. The microphone, furnished with the recorder, is suspended above and in front of the actors so that it is just outside the frame of the picture. It is desirable to place the microphone as close as possible to the actors but satisfactory voice pickup can be obtained with the microphone as much as six feet away from the speaker.

Place a blank disc on the recording turntable. If the complete picture is to run less than three minutes, a 10 inch disc may be used. If it is to run five minutes, a 12 inch disc will be required. Load the camera and start the turntable. Run for a few seconds to take off the film exposed during loading. Have the actors go through a few of their lines while you adjust the amplification to give the proper recording level.

With a red china marking pencil, draw a radial line at the edge of the recording disc. Lower the cutting needle on the line. Adjust the position of the brushes on both the recorder and camera commutators to the starting mark. Then throw the turntable switch and start the action.

When the scene has been completed, stop the turntable leaving the cutting needle on the disc. When making several takes on the same reel of film, the following procedure should be observed. Note the position on the scale at which the camera commutator has stopped. The turntable will coast a little farther than the camera when the power is cut off. Lift the cutting needle and carefully move the turntable backwards until the turntable commutator is in the same position as the camera commutator. For example, if the camera commutator has stopped at 3 on the scale, the turntable must be moved back until the commutator is at the same number. Then lower the cutting

needle gently into the groove. You are now ready for your next shot which is made in the same way. Regardless of the number of interruptions during the filming of the picture, both the film and the record will run continuously when the picture is being shown and the sound for each scene will be exactly synchronized.

At the completion of the filming, the record is ready for use.

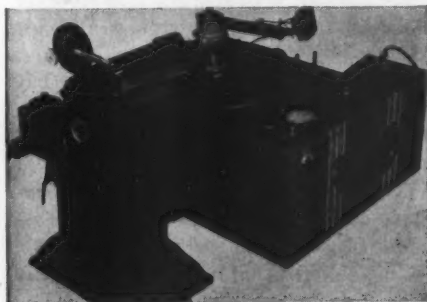
Projecting the Picture. After the film has been processed, the starting point of the film must be matched with the record. Thread the projector so that the first picture is at the aperture. Using the red pencil make a mark across the film at a place which can be matched with a similar mark on the top of the aperture plate. This will give you an experimental point to work from. Now set the playing needle carefully in the first groove of the record at the starting mark you made when the picture was taken.

Set the commutators on both the turntable and projector to the starting mark and throw the turntable switch which also starts the projector motor. Watch carefully for the first lip movement of the actors and note whether it comes before or after the sound on the record. If the picture has been filmed and processed properly, the sound should be in exact synchronisation. If the sound is behind the lip movement, it shows that the picture has started too soon and that your starting mark must be placed nearer the beginning of the film. In some cases, a few feet of leader must be added to thread the projector properly. If the sound is ahead of the picture, the starting mark must be moved a few frames farther along on the film.

When making these adjustments, remember that the film moves 12 frames for each revolution of the turntable. Improper synchronization will become noticeable if the picture is cut more than 2 frames. With a little practice it becomes possible to determine the exact starting point within a few minutes. Once the starting point has been found and marked, the picture and record will always run in exact synchronism whenever they are shown.



Closeup of the camera attachment (left), for taking, and the turntable connected to the projector (right), for showing home sound movies.



Synchronized Narrative for Silent Pictures.

In addition to making talking pictures, the synchronizer may also be used to add narrative comment, sound effects and introductory or theme music to your present library of silent pictures. The titles are removed from the film and a script is written to describe the action in the picture. The narrative is then timed by reading it while the picture is projected. When the timing has been perfected, the narrative is recorded while the narrator watches the picture.

Music and sound effects taken from phonograph records may be mixed with the voice to add realism and entertainment value. Such sound accompaniments may be played on the recorder or on any home phonograph which has been equipped with a commutator.

Trick Effects

(Continued from page 121)

solve. Throw the lens slowly and completely out of focus at the end of the shot. Then begin the next scene with the lens still out of focus, bringing it into sharp focus slowly. (Fig. 5).

Another effect is attained by making a panoram shot at the end of a scene—starting slowly, but increasing the speed so that the result will be a blur on the screen. Stop shooting while the camera is in motion. Your next scene is made in the normal manner. The effect will be a rapid transition from one scene to the next. Use this to create the impression of two action scenes taking place at the same time.

A good acceptable "wipe" can be made easily with a short length of $\frac{3}{8}$ inch opaque cellulose tape, obtainable at your camera dealer or stationer. The tape is laid down diagonally between two scenes so that it covers completely the frame line or splice joining them. It may touch 8 to 16 frames depending on the length desired. Trim so that it does not cover any sprocket holes. (See Fig. 3).

Don't scatter trick shots, fades, and dissolves through your movies for no apparent reason, but be alert to the possibilities where their discriminate use will really liven up your films.

THIS article is one of a continuous series presenting the fundamentals of home movie making for beginners. The first, "Selecting Your Cine Camera" appeared in MINICAM for November, page 157. William L. Morgan is well equipped to write this series, having learned cine photography from the ground up, through practical experience, by taking pictures and reading about them. In this way, he has followed the course generally taken by amateur photographers with the added advantage of some professional experience.



"Bill" got his start as an amateur cinematographer when he and his brother won a movie camera and projector. Finding film costs relatively high, they tried shooting positive film, reversing short lengths in a milk bottle. Soon they built a developing tank and drum and were able to do all the movie making they wanted without worrying about the cost.

Bill has worked in a professional studio on animated cartoons and assisted in the production of three 16 mm. films, using articulated puppets, for exhibitors at the San Francisco World's Fair.

Animated Cartoons

(Continued from page 125)

a figure sketched out before the audience without the aid of a hand. Remember, however, to keep within the field limits of your lens.

To show a figure walking in the center of the field with only the background moving by, draw the background scene on a large sheet of stiff cardboard, 9 x 36". The animated figure, see Fig. 10, is drawn on eight sheets of "cells" to complete the walking cycle. All animation of this figure is drawn one over the other, except for the legs and arms which are spaced $\frac{1}{4}$ " apart per move to create the animated effect.

The long background, called the "pan" in professional studios, is marked along the top at $\frac{1}{4}$ " intervals. The drawings are numbered in proper sequence, and the pan is moved $\frac{1}{4}$ " for every exposure. By changing cells each time the pan is moved, the figure will be shown making forward progress.

Cinecamerists who cannot draw can collaborate with a draftsman or use dummies traced from newspaper cartoons. Such cartoon figures can be pasted on cardboard, cut out, hinged together at knees, ankles, hips, wrists, elbows, and shoulders with pins clinched together, thus forming the complete figure. This figure can then be moved about before the camera lens much in the same manner as an animated drawing. By advancing each move $\frac{1}{4}$ " and exposing two frames, such cutouts can be made to walk, run, bend, or jump. In fact, they can do most anything but turn.

By using skeleton figures for models, different kinds of animation can be worked out. Try one like this: Draw a cartoon figure on a cell without one arm. On four separate sheets of paper draw his arm in motion waving a flag. Ink up these drawings, then lay drawing number one in place on the camera stand, place the cell with the body only over this, turn on the lights, and expose 16 frames. Then remove drawing one and replace with drawing two and the same cell, expose two frames. Follow with succeeding drawings, exposing each two frames, and reshoot the sequence once or twice. When the film is processed and projected, the

man will appear to be waving the flag.

Such simple little animations will give the movie fan a new reason for burning the midnight lamps, and entirely too sophisticated is the cinematographer who will not get a thrill from seeing his first animated cartoon.

SHOOT THE WHOLE FAMILY! HOME MOVIES-Only 10¢ a Day



Nationally Advertised! 10-Day Trial!
Entertain with real movies of children, sporting events, trips, etc. Latest movie cameras and projectors, 8MM and 16MM sizes. For homes, business, churches, schools and clubs. All accessories. Included Customers throughout the World. **MONEY BACK!** 10-DAY TRIAL on all Cameras and Projectors. **SHALL DOWN PAYMENT.** Balance AS LOW AS \$1.00 a Day. FREE details, write: **BOW ELDER'S HOME MOVIES**, 739 Boylston St., Dept. M-1, Boston, Mass.

BEFORE YOU BUY.... See How You CAN SAVE!

Real wholesale prices on cases, screens, cameras and other photographic accessories can save you large sums. When writing, specify make and type of camera for case and all details for other merchandise. Send for our **FREE Bargain List**-today. Our prices will convince you that **IT PAYS TO SAVE BY BUYING DIRECT.**
WHOLESALE CAMERA SUPPLY CO.
29 W. 34th St. Box 8-2, New York, N. Y.

FOTOFADE

FADES, WIPES

Can Be Added to Your Reels
WITH **FOTOFADE** on black and white or color films. Price \$1.00. Waterproof Wipeoff Tape, 60¢ per roll.

Complete Fotofade Kit.....\$1.00
CINETINTS for coloring your 16mm. or 8mm. film. Set of six colors \$3. Big Dealer Discounts

DYE RESEARCH LABORATORIES
319M Jackson Street Los Angeles, Calif.

100 Ft. 16 MM \$2.00 AMBERTINT FILM

Includes Machine Processing
Here's the **REAL** film for exceptionally fine results when taking outdoor movies. **AMBERTINT** is a fine grain, 16mm reversible safety film, packed on daylight spool, ready to load and shoot.

GIVES YOU BETTER OUTDOOR RESULTS
Western rating of 8-AMBERTINT gives you outdoor detail, contrast and shadings comparable to higher priced film. Shoot more outdoor at less cost with **AMBERTINT**. Order **SEVERAL** rolls NOW. California buyers include sales tax.

HOLLYWOODLAND STUDIOS
"The West's Greatest Film Mail Order House"
Southgate, California



"Say, Pop, Eastman Kodak won't return our color transparencies."

16 MM Titles-Trailers

World's Largest Title Service
Now you can have the same deluxe 16 mm titles and trailers that Filmack supplies to thousands of theaters. Smart professional work either silent or sound. Filmack's nation-wide service includes titling, editing, developing & scoring. Send your trial order today and be convinced. Write for catalog.

FILMACK LABORATORIES
639 S. Wabash Chicago

World's Greatest Variety
5,000 BACKGROUNDS
Complete Music Library!

16 MM TITLES & TRAILERS
4 mm. 8 mm. 16 mm. 35 mm. 12 WORDS ON LINE.....with background music.....
Developed by
Wagon

YOUR TITLE HERE!

16 MM TITLES - TRAILERS DEVELOPING - ETC

Thousands of Camera Enthusiasts Agree:

DETROLA

PRECISION-BUILT CAMERAS
TOP THEM ALL FOR
Extra VALUE!



MODEL "KW"

f:3.5 Wollensak Veltimate lens with Exposure Indicator and diaphragm. 1/25 to 1/200 second, time and bulb. Accurate focus 3 feet to infinity. Range - tip control. Automatic lens mount. Extension view finder. Optical view finder. Conical color. Tripod mount. Cable release. ... \$22.50

Genuine leather carrying case \$4.50

MODEL "HW"

f:4.5 Wollensak Veltimate lens. **ALL FEATURES OF MODEL "KW" DES. \$15.00**
CRIBED ABOVE

Genuine leather carrying case \$4.50.

MODEL "GW"

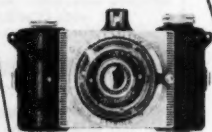
f:4.5 Wollensak Veltimate lens. 1/25 to 1/200 second, Variable focus 3 feet to infinity. \$12.50
Built-in optical view finder. Genuine leather carrying case \$4.50.

MODEL "G"

f:4.5 Ilex Anastigmat lens. Coated for color. 1/25 to 1/200 second, time and bulb. Built-in optical view finder. Focus 3 feet to infinity. Tripod mount and cable release. ... \$9.95
Genuine leather carrying case \$4.50.

MODEL "A"

Ilex Anastigmat Lens. Instantaneous shot and time exposures. Fixed focus. Uses standard film. Provision for extra film. Precision built. Complete with neck cord. ... \$3.95



16 exposures—standard film

Detrola "400"

ONE OF AMERICA'S FINEST CAMERAS

Everything you've ever wanted in a camera: Anastigmat f:3.5 Wollensak lens. Built-in coupled Miracle Eye range finder. Focal plane shutter . . . speeds from 1 second to 1/1500 second. Built-in positive flash synchronizer. Automatic transport prevents double exposures. Interchangeable lens. Depth of focus scale. Automatic Exposure counter. Standard tripod socket. Diaphragm openings f:3.5 to f:22. Uses standard 35mm black-and-white or color film cartridges. Takes full-size frames. Leather covered, all-metal steel case, in satin-finish chrome trim.

\$69.50

Complete with Genuine Evershedy Carrying Case

Prices subject to change without notice



ZIP OFF AND MAIL TODAY

Detrola Corporation
Detrola Building, Detroit, Michigan

- ☐ Please send me catalog of Detrola Cameras.
- ☐ Please send me name of nearest Detrola Dealer.

Name

Address

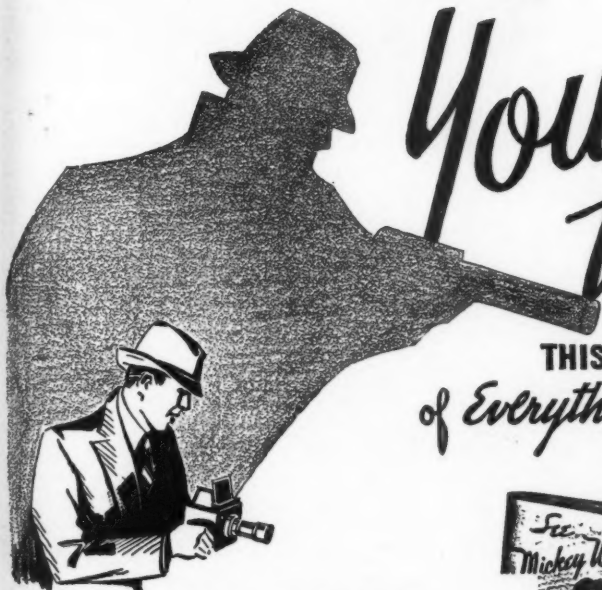
City State

All Detrola Cameras Are Made Entirely in the United States
DETROLA CORPORATION, DETROIT

You asked for it!

THIS BIG NEW CATALOG of Everything PHOTOGRAPHIC

being issued by popular demand of our many mail order patrons.



TYPICAL BARGAINS

AVAILABLE AT THE L. A. CAMERA EXCHANGE

All Merchandise Sold on a 10-Day Trial Basis.

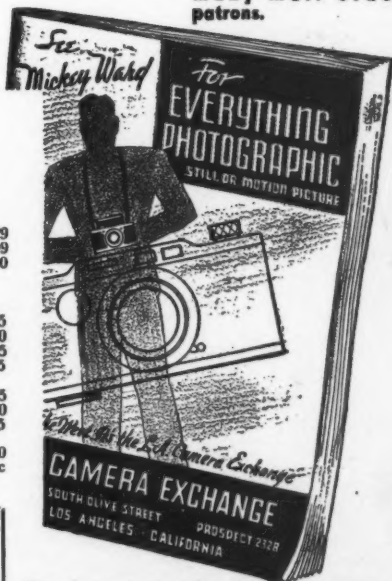
Clamp-on Reflectors 10" regular	\$2.00, special	\$1.29
11" regular	\$2.25, special	\$1.49
Lightning Flash Synchronizer, regular	\$10.00, special	\$7.50

SLIGHTLY USED CAMERA BARGAINS!

PERFEX 44 with F 3.5 lens—regular	\$37.50, special	\$27.95
PERFEX 44 with F 2.8 lens—regular	\$47.50, special	\$34.90
A-F ARGUS Focusing Model, F 4.5 lens		\$7.95
35mm NIKOR Developing Tank—regular	\$4.50, special	\$1.95
EXCELSIOR Tripods—Brass		
3 sections		\$1.95
4 sections		\$2.50
5 sections		\$2.95
ELKAY Adjustable Roll Film Tank—35mm to 116 size—regular	\$2.75, special	\$1.60
BRITELITE Tilt Top for Tripod		98c

Optical Glass Filters in yellow 1-2-3, green 1 and 2, and red medium.

25mm.	\$1.35
1 1/4mm.	\$1.50
39mm.	\$1.65



For the amateur—a beautiful 92-page 2-color catalog full of money-saving ideas of everything photographic. Send 10c now—refunded with first purchase of \$1.00 or more.

Camera Clubs write for details of special offer.

WE BUY — WE SELL — WE TRADE — WE REPAIR

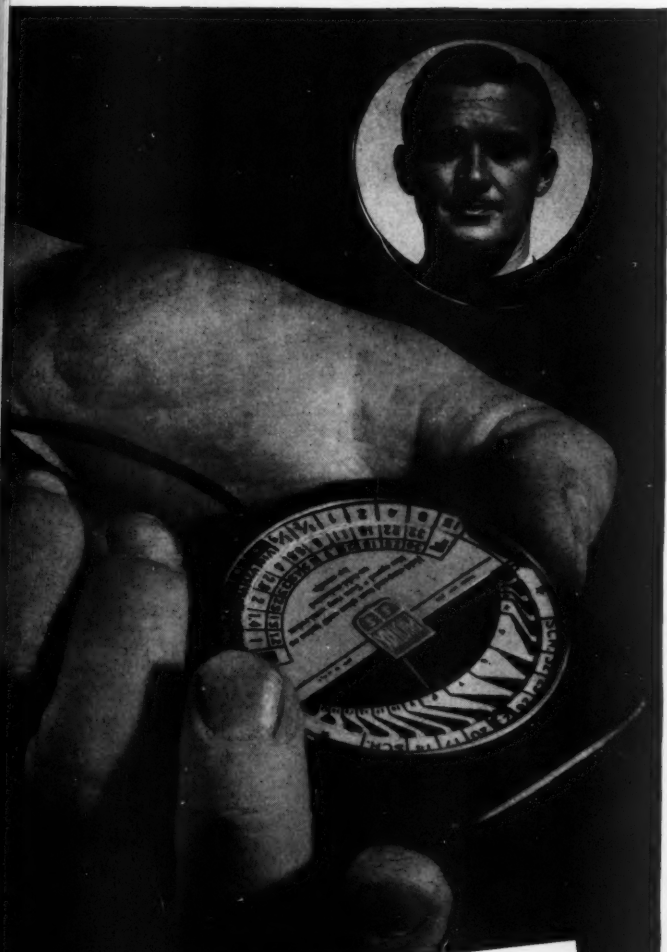
L. A. CAMERA EXCHANGE

1035-37 SOUTH OLIVE STREET

PROSPECT 2328

LOS ANGELES • CALIFORNIA

'FOR FULL BEAUTY IN COLOR DEPEND ON PHOTRIX SS



says
TRUMAN D. VENCILL
noted photographer

A professional whose breath-taking pictures vividly illustrate the scenic beauties of California and Nevada, Mr. Vencill adds: "I get my best pictures from readings taken with the Photrix SS exposure meter. I've tried them all, and for true, accurate color rendition, it's Photrix SS for me every time."

Acclaimed by photographers everywhere, Photrix SS offers an unequalled margin of extra-sensitivity that assures accurate readings under all conditions. Correct exposures in dim or glaring light, in extra-critical cases as well as in everyday photography.

Photrix SS eliminates "gear shifting"—it covers the complete range of light values on one wide scale. No baffles, no switching or transferring of figures from one dial to another; all readings are taken on one single dial.

Bulkiness is eliminated, too. Photrix SS is the only meter that combines extra sensitivity with compactness and simplicity. You'll like its easy operation, size, shape and feel. Better still, you'll like the improvement in your pictures . . . \$18.75

PHOTRIX SS

See the Photrix SS at your dealer, or write for descriptive booklet to Dept. M-1

Film speed range: 11 to 38 American Sch., 1.5 to 800 W.
Exposure time range: 1/2000 to 60 sec.
F: stop range F:1 to F:36
Reading range: 60 sec. to 1/500 sec. at F:8, 23 Sch., 24 W.
MADE IN U. S. A.



INTERCONTINENTAL MARKETING CORPORATION, 8 West 40th Street, New York

R
S

U
r

ath
ran
ma
a:
ess
x S
ben
ole
r m

ner
a m
os
raic
os
gle
es a
ph
ger
ole
rid
g
os
m

to
the
w
pi
h, l
ell
it l

X